SOCIAL AND ECONOMIC CONSEQUENCES OF NONTRADITIONAL EXPORTS: THE PLANTAIN INDUSTRY IN HONDURAS

By

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To my parents Emma Romero de Callejas (QDDG) and Rafael Callejas Valentine. The example they set, their love, and their caring are all reflected in the accomplishments of their children.

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ABBREVIATIONS AND ACRONYMS USED

BANADESA	Honduran National Bank of Agricultural Development
CARPIHL	Regional Agricultural Cooperative of Independent Plantain Producers of Honduras
CBI	Caribbean Basin Initiative
CEPAL	Spanish for ECLA
CEPS	Center for Economical, Political and Social Studies, Tegucigalpa, Honduras
COCOPLAINH	Marketing Cooperative of Independent Plantain Producers of Honduras
CWT	Hundredweight, or 100 pounds
ECLA	Economic Commission for Latin America and the Caribbean
EDUCA	Editorial Universitaria Centroamerica, San José, Costa Rica
EL	export-led (EP)
EP	export promotion
EXP	export status (1=exporter, 0=nonexporter)
FEPROEXAAH	old name of FPX
FHIA	Honduran Foundation for Agricultural Research
FPX	Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FEPROEXAAH)
GDP	Gross Domestic Product
HA	hectare
IBRD	International Bank for Reconstruction and Development (World Bank)

ICAITI	Central American Institute for Research and Industrial Technology, Guatemala, Guatemala
IICA	Inter-American Institute for Cooperation on Agriculture, San José, Costa Rica
IMF	International Monetary Fund
INA	Honduran National Agrarian Institute
INFOP	Honduran National Institute for Professional Training
IS	import substitution
KG	kilogram
LB	pound
LP.	lempira, Honduran monetary unit
M.T.	metric ton (2,204.6 lbs)
NTE	nontraditional export
OPEC	Organization of Petroleum Exporting Countries
PNP	Honduran National Plantain Program
SAPs	structural adjustment programs and policies
SECPLAN	Honduran Secretary of Planning, Coordination, and Budget
SRN	Honduran Secretary of Natural Resources
TRRCo	Tela Railroad Company, a subsidiary of United Brands
USAID	United States Agency for International Development

Abstract of Dissertation Presented to the Graduate School of the University of Florida in Partial Fulfillment of the Requirements for the Degree of Doctor in Philosophy

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This study investigates the social and economic consequences of promoting nontraditional agricultural exports as a national development strategy. The analysis focuses on the plantain industry in the Baracoa area within the Cortés Departamento of Honduras. Nontraditional exports are expected to generate employment, increase income, and provide foreign exchange necessary for debt service payments and for purchasing imports. At the producers' level, the production for export is presumed to improve the farmer's standard of living, ownership and use of capital and land, and access to institutional resources.

Primary and secondary data were compiled to assess the effects of export agriculture on the farmer's social and economic standing. Key informants were interviewed to describe the recent history and current situation of the

industry in Baracoa. From a population of 667 producers in Baracoa, 151 were surveyed during Fall 1987 and Spring 1988. The instrument included a wide range of social (e.g., electricity, water, sewage, diet, and medical care) and economic (e.g., land ownership, land quality, and income) indicators. Producers were classified as either exporters or nonexporters according to their relationship to the international market. Crosstabulation and regression analyses were used to describe producers and evaluate the impact of selected variables on the standard of living of producers.

Findings revealed that plantain exports from Honduras were controlled by middlemen linked to a multinational corporation. The public sector, although present, did not play a decisive role. Two cooperatives were helpful in facilitating the use of higher technology. Exporters used aerial control of Black Sigatoka and obtained greater quantities of better quality product. They had more land of better quality than nonexporters. Regression analysis showed that land assets were a stronger predictor of standard of living than was the exporter/nonexporter status. Exporters were generally better off than nonexporters, although neither group of producers achieved a high standard of living or were able to accumulate much capital or land. The results of this study (which cannot be generalized to other crops, regions, or countries) find little support for

the hypothesis that nontraditional export agriculture improves the social and economic standing of small-scale farmers.

CHAPTER 1
INTRODUCTION

Overview

Prior to the 1950s, most Latin American economies relied on the export of primary agricultural products such as coffee, sugar, and bananas. These exports failed to make significant contributions to national development. In the 1950s and 1960s, policy makers increasingly recognized that agricultural export earnings could be used to subsidize the promotion of industrial development. Import substitution policies were proposed. Import substitution (IS) was a development strategy that included a set of policies to establish an industrial sector geared towards the domestic (and regional) market to reduce the quantity of imports from the industrialized nations.

By the late 1960s it became increasingly apparent that IS strategies were not having the desired results. In response to these difficulties, export promotion policies to stimulate the export of nontraditional products were presented in several nations, specifically Brazil and Colombia. Export promotion or export-led (EP) was a development strategy which included a set of policies to facilitate traditional and nontraditional raw materials and/or manufactured goods to be traded by a nation in order

to obtain foreign exchange. By the 1970s, agriculture was considered to have a role in development. Integrated rural development projects and basic needs programs were implemented. Agriculture had the potential to positively affect social equity.

During the 1980s, the world underwent an economic crisis which affected all Latin American nations. As the debt burden continued to rise, international lending institutions insisted that developing countries adopt structural adjustment policies and that they reactivate their agricultural sector. The role of agriculture became important with respect to nontraditional exports (NTEs), domestic food production, and the impact of the structural adjustment policies. Structural adjustment programs and policies (SAPs) were a set of policies which introduced market regulation in accordance with neoclassical economic theory to improve the national environment and stimulate a stagnant economy. Developing nations sought to implement policies to produce NTEs based on the comparative advantage provided by lower labor costs. Structural adjustment programs encouraged NTEs because of the need which developing nations had to obtain foreign earnings. In so doing, these nations had to consider issues of concern in the literature such as the cash crop and food debate, land structure problems, and possible future difficulties of stability and agricultural sustainability (Paus, 1988a;

Maxwell and Fernando, 1989; von Braun et al., 1989; de Janvry and Sadoulet, 1989; Williams, 1986; Barbier, 1989).

As the above comments illustrate, development strategies are continually proposed for the developing nations, each of which involves the agricultural sector in different ways. Throughout the period from the 1700s to the present, IS and EP strategies with different policy variations such as structural adjustment, structural transformation, and the various roles of agriculture, have affected Central America. Structural transformation is a "change in the productive structure of the economy" (O'Brien, 1991). Nontraditional export policy, a spin-off of the export-led strategy for development, is often seen as part of the basic solution. But is it?

Honduras has passed through this process of adopting and implementing policies following specific development strategies. During the 1950s, cotton, sugar, and beef were proposed as nontraditional export solutions for the economic problems facing the nation. Since the middle of the 1980s, increasing emphasis has been placed on the promotion of NTEs, especially those generated by the agricultural sector.

One such export product is plantain (Musa paradisiaca), a versatile ethnic food. It is often referred to as a "cooking banana", a commodity that has shown increasing

potential within the U.S. market[1] in recent years. As a nontraditional product it is expected to facilitate development and serve to make producers better off.

Plantain production, processing, and marketing form an agricultural industry that exists within a social system comprised of several interrelated formal and informal groups. The plantain industry is of interest to consumers, producers, laborers, marketing and transportation entrepreneurs, and development and financial agencies.

Plantain is important in Honduras because it generates employment and income for many people, including the primary producer, family members, laborers, middlemen, and transportation entrepreneurs. Plantain is produced on 10,470 hectares (ha) by 6,200 farmers (FHIA, 1985). Thus, an estimated 81,200 persons--about two percent of the Honduran population--are directly involved with the plantain industry. Of this total, 37,200 people are family members, another 44,000 are laborers and people who participate in transport and marketing activities.

Plantain is a necessary product in the Honduran economy because it is consumed in large quantities locally. In addition, it is an export commodity that provides foreign exchange earnings to the country (Table 1-1), thus

---

[1] "(P)lantain exports to countries outside Central America jumped from $0.2 million to $1.5 million from 1984 to 1985 and was expected to double in 1986. The upswing resulted from increasing export volume, which grew eightfold during 1985" (Heffernan, 1988, 128).

TABLE 1-1. PLANTAIN EXPORTS FROM HONDURAS PRIOR TO THE INCIDENCE OF THE BLACK SIGATOKA DISEASE

YEAR	PRODUCTION (M.T.)	EXPORTS (M.T.)	VALUE F.O.B. (1,000 LPS.)
1973	119,505	26,203	3,452
1974	51,483	16,912	2,313
1975	54,057	2,847	267

Note: M.T. = Metric Ton = 1,000 KG (kilogram)
Source: Morales y Vasquez, 1983, 2.

facilitating imports and payment of foreign debts. Since the early 1980s it was considered to be a NTE with great potential because the Federation of Agricultural and Agroindustrial Producers and Exporters of Honduras (FEPROEXAAH, now FPX) had opened marketing alternatives (Heffernan, 1988). Plantain has an ethnic market in the U.S. However, in January 1991, the leader of the Plantain Program in the Honduran Foundation for Agricultural Research (FHIA), Ing. Carlos Medina, concluded that plantain production and exports were not living up to expectations (personal communication). The export of plantain might bring foreign exchange to the nation, but what did that mean for the producers themselves?

Not all the aforementioned groups in the plantain industry are involved in production and processing for export. Wage rates and employment opportunities in the industry for export and for the regional markets are among those issues that have not been addressed in the literature. Another related issue is the extent to which those who perform activities within the plantain industry share equally in the risks, benefits, and resources.

Objectives

In light of these issues, the objectives of this dissertation are threefold: (1) to review the literature on development policy in order to identify the changing role of the agricultural sector; (2) to analyze the character of the

production, marketing, and export of plantain in the Baracoa area of Honduras; and (3) to investigate the impact of NTEs on the social and economic standing of plantain producers.

To address these questions, primary data were collected using in-depth interviews with key informants to describe the recent history and current situation of the plantain production area. A survey was also carried out among plantain growers in order to generate quantitative data to compare exporters and nonexporters. The key social and economic indicators discussed herein are (1) standard of living, (2) ownership and use of capital and land, and (3) access to institutional resources.

Questions to be addressed are related to the producers' social level of living, the quantity of land and of production, the technology used, and the access to institutional resources. A comparison of producers is most appropriate because the difference in results due to export status will allow an assessment of the importance of proposing NTE policies for the development of Honduras and the improvement of the day-to-day life of the producers.

Organization of Dissertation

This study is divided into six chapters. Chapter 2 is divided into three parts which place the nontraditional exports approach within the literature on import substitution and export expansion development strategies. Particular attention is paid to the role of agriculture, the

cash crops debate, the land tenure problem, and subsequent debates. Chapter 3 presents the setting, background information, and research design for the case study. Chapter 4 describes the plantain production area and the plantain producers (those who sell for export as well as those who do not). Chapter 5 discusses the social and economic impacts of plantain export and tests the proposed hypothesis. Chapter 6 presents conclusions and recommendations. Appendices A and B consist of a key informant interview guideline and a producer survey questionnaire, respectively.

CHAPTER 2
DEVELOPMENT AND NONTRADITIONAL EXPORTS

Introduction: Paths of Development

The social and economic policies nations have historically followed have led them down different development paths. In this chapter the development histories of Latin American and other nations are described. The interpretations of the strategies that these countries have pursued are then summarized. A review of the field of development studies facilitates the understanding of why agricultural NTEs have been proposed. In the pages that follow, the role that agriculture has played in development policies is emphasized, giving special attention to the particular issue of nontraditional exports.

This chapter proceeds from a general to a specific discussion, organized in three parts. Part I is a general review of development thinking, noting the role that the agricultural sector has played in the prolonged debate over the causes and consequences of economic growth in the Third World. The second section (Part II) re-examines some of the general issues discussed in Part I, giving closer attention to the agricultural sector and agricultural development policies in various countries, including Honduras. The third part further narrows the discussion to the case of

nontraditional agricultural exports. Subsequent pages draw on this review of the literature in order to derive the research hypotheses tested in this dissertation regarding the case of plantain production in Honduras.

Part I: Development Strategies

Development can follow two main paths, capitalist and socialist (Webster, 1990, 143). The capitalist path is suggested by several theories of development, of which modernization is the most well known. The socialist path is proposed by both Marxist and underdevelopment theorists. Underdevelopment theory is actually a collection of views regarding development (Cardoso and Faletto, 1979; Chilcote, 1984; Fagen et al., 1986; Warren, 1980; Webster, 1990). Dependency theorists see the Third World as a global system in which the advanced capitalist states extract surplus from underdeveloped nations. More recently, analysts have called attention to the increasing "internationalization of capital," a perspective that focuses on the export of the production process from the center to the periphery of the world system (Barkin, 1982; Sanderson, 1986; Sen, 1989). Within each of these theoretical traditions, agriculture has played a different role.

Historical Perspective

The strategies countries followed during the period from the 1700s to the 1930s resulted in a pattern of international trade characterized by a periphery that

specialized in agricultural commodities and raw materials; and a center that specialized in manufactured goods. The center and periphery were joined in a world system of trade that, initially, was assumed to benefit both parties to the exchange. Subsequent evidence showed that, in most cases, the center/core countries advanced while the periphery lagged behind.

International trade was considered important by policy makers and some theorists. Agricultural products and raw materials were increasingly exchanged for manufactured products. Adam Smith and David Ricardo argued that trade offered increasing possibilities for economic growth, which would otherwise languish because of diminishing returns in agriculture (Hunt, 1989). Smith perceived the expansion of markets and Ricardo saw the significance of specialization according to comparative advantage. Ricardo's theory of comparative advantage predicted that specialization in the production of agricultural commodities and raw materials would benefit the periphery, and the center as well, because the factors of production would be efficiently allocated at a global level. Ricardo also observed that economic growth could decline because of unmet increased demand for food in the manufacturing sector. He identified two ways to deal with the situation: the introduction of technical innovation in agriculture and the use of international trade to

exchange food for manufactures (Hunt, 1989). Agricultural specialization, in effect, was a positive phenomenon.

Central American nations specialized in export of agricultural products. These nations began exporting during the 1800s and consolidated their export-led model by 1920 (Bulmer-Thomas, 1987). These small countries had managed to strengthen their position in world trade as exporters of coffee and bananas. Honduras, in the 1920s, was characterized by the export of mining products and bananas (Torres Rivas, 1969). At that point, the Great Depression of the 1930s disrupted world trade.

The response of the larger developing nations, which were producing agricultural commodities for export, was to begin an import substitution process in their attempts to achieve industrialization. Import substitution became more prevalent in the larger Latin American countries, from the 1950s to the 1970s. The smaller developing nations, such as those found in Central America, had neither the capital nor the internal market to follow suit immediately.

In Central America, a strong group of agricultural exporters managed to control the decision-making process. However, the export-led model followed by these countries did not result in development and an improvement in living conditions for the majority of the population. The Central American nations exported traditional and nontraditional agricultural commodities--cotton, beef, and sugar. Finally,

industrialization through IS strategies was slowly adopted. In Central America, IS policies were conceived on a regional scale due to the small size of their markets.

Import Substitution

After 1950 the Economic Commission for Latin America and the Caribbean (ECLA),[1] along with dependency and world systems theorists, advanced arguments that rejected the classical Ricardian theory of the mutual benefits expected from international specialization and exchange (Wood and Magno de Carvalho, 1988). Ricardo's theory of comparative advantage was rejected in Latin America due to the failure of the EP model to provide a self-sustained growth of the economy, and an IS strategy was adopted. Critics of the theory of comparative advantage noted that the exchange was increasingly unequal. Raul Prebisch (1959), for example, focused on the deteriorating terms of trade due to the differences between agricultural products and manufactured products. He noted that, over time, the quantity of agricultural commodities required to purchase a constant quantity of manufactured items tended to rise. The outcome was a transfer of surplus from periphery to center.

For Gunder Frank (1967), the difficulties stemmed from the exploitation of the "satellites" by the "metropole." Cardoso and Faletto's interpretation (1979) was that

[1] In Spanish, ECLA translates as the Comisión Económica para América Latina y el Caribe (CEPAL).

development occurred, but in a dependent rather than an autonomous fashion. De Janvry (1981) saw the disarticulated nature of the Latin American economies as the cause for lack of development. He presents two cases of "socially disarticulated" economies: export-enclave and import substitution economies. He finds that these are disarticulated because production and consumption capacities are not in accord; there is no relationship between return to capital and return to labor. "Pure social disarticulation" is, for de Janvry and Sadoulet (1983), a structural condition where the key sectors only produce luxury goods which are not consumed by workers; nor are producers' profits related to wage income. In a social articulated economy, by contrast,

> wages create the bulk of final demand for all sectors of the economy. This implies that, once full employment is obtained, steady-state growth requires that any increase in the productivity of labor in the sphere of production must be matched by an increase in real wages in the sphere of circulation (1983, 279).

An economy with surplus labor and fixed workers' wages, in contrast, will remain socially disarticulated.

The 1950s debate concerned the advantages of inward-oriented compared to outward-oriented policies, and their effects on economic growth (Krueger, 1987; Bhagwati, 1988). Advocates of IS pointed to several aspects which made competition on a global scale difficult for developing nations. One concern was that of market imperfections. For example, even a global market cannot absorb all of the

exports from developing economies. Another issue is the use of protectionist measures by developed nations. Finally, critics considered the global shift from natural raw materials to synthetic materials. It should be noted that advocates of EP saw protectionism in developing economies as a hindrance to inward-oriented policies.

Another main axis of the debate concerned the issue of agriculture and its relative importance to manufacturing as the means for industrialization (Chenery, 1958; Prebisch, 1959). Chenery (1958) observed that disagreement existed between support for investment in primary production and international specialization, and support for "balanced growth" and industrialization. These alternatives were thought to be mutually exclusive because of the allocation of scarce resources. The main problem, in Chenery's view, was in the evaluation of the amount of scarce resources, which should have been done through the price system. However, in the developing economies this price system was an unreliable guide to investment opportunities.

By the 1960s, analysts were already questioning the efficacy of the IS strategy (Furtado, 1966), although some analysts continued to advocate the strategy (Hirschman, 1968). Hirschman endorsed import-substituting industrialization because he saw "open avenues toward continued industrial growth" (1968, 31). Import substitution, as a process of industrialization, was

expected to generate backward and forward linkages as the need grew for inputs which were no longer imported, and as the finished product required additional services. The result would be a process of "economic takeoff."

Import-substituting industrialization touched upon issues of industrialization and of the role of the state (which would indirectly intervene as policy formulator and directly participate as an entrepreneur). First, consumer goods would be produced and then, as the need would arise, intermediate goods and machinery would be manufactured. Although exports would not be promoted, exports would still be seen as a source of foreign exchange. Entrepreneurs who previously functioned as exporters would become producers. As a modernization model, values and attitudes were also considered. With IS, the traditional nations would follow the steps of the modern ones; that is, they would follow the same path of industrialization and learn about new technology without having to work so hard to obtain it. This would allow the newly industrialized economies to advance by leaps and bounds. Import substitution would be joined in the end phase with exports. Industries could operate at full capacity only if an external market existed that could absorb the volume of production.

Import substitution was endorsed to generate employment and save foreign exchange (Sanchez, 1983). The developing economies also pursued IS in an attempt to shift from

primary exports to manufactured exports and thereby reduce dependence on the economic growth of the industrialized countries (Labys and Lord, 1990). As was expected according to the IS analysis, first the countries went from buying consumer goods to importing capital goods and raw materials, later producing those consumer goods so that foreign exchange needs were reduced (Carvajal, 1987). However, with increased demand for consumer products, the foreign exchange needs again increased. The period from the 1960s to the middle of the 1970s saw the end of the "easy" phase of IS for the larger developing countries. Imports increased more rapidly than did exports, thus exacerbating the balance of payments problem. The countries acquired loans from international institutions to facilitate imports (Carvajal, 1987). But this took place at a time when international interest rates rose. The loans were acquired at floating rates, and the exchange rates were overvalued. Countries therefore had higher debt service, thus increasing their deficits.

Ironically, the Latin American nations were now more dependent than ever on the developed economies because of the growing need to import capital goods for industrialization. Regional efforts to establish and maintain a regional trade system in Central America failed, and the industrialization process stagnated. What growth had taken place in the industrial sector only made Central

America more dependent on imported inputs, as it did in other countries in the hemisphere.

Import substitution has been criticized before (Furtado, 1966) and remains a focus of contemporary debate. Some of the current arguments against IS are similar to those made earlier (Bhagwati, 1988). According to Felix (1989) critics of IS fall into three main categories: (1) those who totally reject the benefits of IS and believe in "getting prices right"; (2) those who believe in political determinants, "hard versus soft" states; and (3) those who believe in socioeconomic determinants, such as behavioral differences among consumers due to the extensive craft sector and the slower shift in preferences, or due to "international demonstration effect" on preference formation.

From a current economic perspective, various analysts have presented the positive and negative characteristics of IS (Artavia, 1987; Colburn, 1987; Labys and Lord, 1990; Krueger, 1987; O'Brien, 1991; Paus, 1988a). Positive aspects include (1) the objective of stimulating industrial growth; (2) the attempt to decrease dependence on the international market; and the fact that (3) IS policies are comparatively easy to implement. Some of the negative features include (1) a difficult and time-consuming system of import licenses, (2) overvalued exchange rates, (3) the protection of inefficient industries well beyond the "infant

industry" stage and (4) the increase rather than the decline in the dependence on the developed countries. Because the negative effects of IS seemed to have overshadowed the positive ones the idea of export promotion has recently gained new currency in the realm of development policy.

Export Promotion

The export-led (EP or EL) strategy had been considered for Latin America since the Second World War. It was not endorsed because of the uncertain prospects for primary agricultural products, and the diversification of exports was discarded as a possibility for the region (Schydlowsky et al., 1983). Nontraditional exports in the developing Latin American nations began in the 1960s when the coffee exporters--mainly in Brazil and Colombia--saw the need to diversify in order to develop (Schydlowsky et al., 1983). At that time, the East Asian countries were producing nontraditional manufactured exports.

Export promotion development strategy proposes that the nations use their comparative advantage to produce at lower cost and thereby gain a greater share of the world market. In the eyes of free market economists, this strategy means less state intervention and less control over prices. According to this view, capital-intensive industrialization processes should not be subsidized, and wages are to be determined by the market rather than by decree (Colburn, 1987).

Several researchers (Karp, 1988; Schydlowsky, 1967; 1972; Zimbalist, 1988a) ask whether IS and EP should be used alone or in combination. Some believe that the policies for each of these strategies are mutually exclusive and policy inconsistencies should be avoided (Karp, 1988). Others conclude that both IS and EP strategies may be appropriate in the long run (Castillo, 1987). At present, most of the Latin American economies have been characterized by a regulatory environment geared toward IS. Since the need for EP is recognized, there is a concomitant need to develop coherent policies so that the IS effects do not hinder the production of manufactured and agricultural exports by discriminating against exporters. Import and export activities must be combined to obtain the necessary foreign exchange for the import level of increased growth in inputs for industry.

Nontraditional export was successful in some nations (Sanchez, 1983; Schydlowsky, 1986). In the case of the Philippines, the IS policy was changed to an EP strategy to stimulate diversification of nontraditional unmanufactured and (mainly) manufactured products for export. The surge of NTEs in the decade of the 1970s allowed the country to experience a 20-fold increase of exports. To support export expansion, the Philippines permitted export industries to operate as export processing zones, without being located in a free-trade area. Sanchez observed that NTEs provided

employment, higher income for women, industrial habits to laborers, and encouraged entrepreneurship and innovation in businessmen.

Similarly, IS policies in Peru were pursued through several means: (1) exchange control, (2) import licensing, and (3) import restrictions on those articles that could be produced in the country. The result of IS industrialization was an increase in the use of imported inputs and thus increased pressure on the balance of payments. However, a change to the promotion of NTEs resulted in a 24-fold increase in the value of export--from $34.2 million in 1970 to $832 million in 1980. Schydlowsky (1986) showed that NTEs contributed positively to the GDP. The fiscal balance and the country's international reserves also improved.

Until 1987, the Central American region did not show significant progress in the adoption of a new export strategy (Lindenberg, 1987). In Honduras, however, the NTEs from agriculture showed one of the highest increases in the region from 1979 to 1985. Lindenberg believes that small size of the Central American economies limited the possibilities of changes in their strategies. The NTEs alternative exploits the region's comparative advantage, namely its low wages (Zimbalist, 1988a). However, Lindenberg (1987) contends that political and institutional changes are required to support any new development strategies in the Central American nations. Other

requirements for NTE policies are similar to those previously seen for the EP strategy. These include: (1) a neutral foreign exchange regime; (2) incentives for exporters which include tax credits, full or partial rebates on duties, and access to financing at preferential interest rates; (3) a consistent development framework; and (4) a coherent overall price structure (Paus, 1988b).

It was only after the oil shocks that the EP model became prominent again when the International Bank for Reconstruction and Development (World Bank or IBRD) proposed it as a major part of SAPs. An increase in foreign debt, and the price rise associated with oil market shocks, set in motion the recession that characterized the 1980s. In Central America, it was a period of economic and political crises.

Some researchers noted that previous diversification attempts were not the same as those of the 1980s, and that currently there is support for primary agricultural NTEs (Labys and Lord, 1990). In the present debate between IS and EP, some researchers (e.g., Castillo, 1987) believe that the debate regarding the role of agriculture is over. The importance of agriculture is obvious for several reasons: agricultural inputs are needed for manufacturing; greater efficiency in food production allows human resources to be transferred to the industrial sector; and, finally, the

production of both raw inputs and food reduces the amount of imports a nation requires.

The observations in this section suggest that EP policies were once accepted, then rejected, only to be accepted again as possible strategies for development. As we have seen, the shift in policy emphasis has varied historically and has followed a somewhat different trajectory when the larger and the smaller countries are compared. The most recent evolution of the debate concerning the role of nontraditional agricultural exports is tied to structural adjustment policies brought on by the economic crisis in the 1980s and internal factors of some developing nations.

Crisis of the 1980s

The recent global economic crisis affected the Central American region between 1979 and 1984 (Bulmer-Thomas, 1987; CEPAL, 1990; Colburn, 1987a; Hallauer, 1985; Murga, 1985). The fall in market prices during the 1980s was the largest since the Great Depression (Labys and Lord, 1990). The traditional primary commodity exports could not enhance export earnings. The region was also affected by the political conflicts in Nicaragua, El Salvador, and Guatemala.

The crisis of the 1980s resulted from the compounded effect of oil price increases in 1973 and in 1979, the collapse in world prices of primary products, and a

deterioration of the terms of trade (Gladwin, 1991). These external and internal factors led to an increase in national debt, a rise in demand for dollars on international markets and the real interest rate, and the deterioration of national investment in social programs.

Bacha (1986; 1988) explains economic stagnation in Latin America as a result of external and internal factors. The reasons for the negative results of the crisis are not only external shocks, but also domestic policy actions of the Latin American nations. He divides into three groups the reasons for the deterioration of the balance of payments in the Latin American nations (specifically, Brazil). The first group of factors are external shocks, which include terms of trade, international interest rates, and world recession. The second group consists of the debt burden which includes the accumulated effect of past shocks and domestic policy action. The third group, domestic policy actions, comprises variables controlled by local policy makers. The debt crisis increased for Latin American nations when they borrowed heavily to finance their deficit and/or expand their imports, rather than expanding their capacity to invest through increases in productivity or national savings.

Some of the key exports from Central America (coffee, bananas, and sugar) are products that are not necessities, especially in times of economic difficulty. As a result,

the demand for these exports declined in the 1980s. Meanwhile, the costs of petroleum-based imports increased due to the OPEC oil embargo of 1973. Central America borrowed to keep up with its import needs and repayment of loans, while interest rates increased, resulting in greater debt burdens. During 1981 and 1982, GDP growth became negative. By 1984, signs of economic recovery were still not apparent. The deterioration of the quality and quantity of social services, such as health, education, sanitation, and water supply, as well as declining social indicators such as income, exacerbated the situation.[2]

During 1989, Honduras remained dependent on its key traditional agricultural exports to provide most of its foreign exchange.[3] Bananas and coffee still provided 39.3% and 25.2% of that foreign exchange, respectively (CEPS, 1990). By 1989, the public deficit had reached US$ 3.3 billion (CEPS, 1989). By June of 1990, debt servicing represented 34.6% of the Honduran export earnings (SECPLAN, 1990). The rate of growth in GDP decreased from 5% in 1988 to 2.1% in 1989. The public deficit increased from 7.5% to

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[2] In Honduras, the quantity of some services increased but the quality declined (SECPLAN, 1990). Health centers expanded from 1980 to 1988 but medicines and medical and surgical materials were scarce. Also, the personnel ratio deteriorated. Housing increased 68% from 1974 to 1988 but lacked services and 43% were in need of repairs.

[3] At that time, Honduras continued with IS and EP policies, while other Latin American and African countries had applied SAPs.

9.2% during the same period (SECPLAN, 1990). Income per capita in 1989 was 13% lower than in 1980 (CEPS, 1990). In 1990 the social and economic indicators showed that 75% of the population was living in poverty, 51% lived in extreme poverty, and a high unemployment rate prevailed (SECPLAN, 1990). Moreover, most Hondurans lacked basic services: (1) 60% of the economically active population had only three years of education, (2) 31% of the houses did not have access to drinking water, (3) 42.2% of the houses lacked sewage systems, (4) 40% of the school-age children were malnourished, and (5) the child mortality rate was 64.9 per 1,000 live births.

At the same time, evidence from various nations, indicated that outward-oriented (rather than inward-oriented) policies resulted in higher employment and growth rates, as well as increased foreign exchange and a better solution to the 1980s crisis (Krueger, 1980; Balassa, 1984; Bhagwati, 1988). This was especially true for the East Asian nations.

Central American countries have recently implemented EP policies characterized by incentives to increase the export of nontraditional agricultural products. Promotion of agricultural NTEs was emphasized in response to external influences and a need to control economic problems, such as the balance of payments and reduced growth rates. Central America made use of the opportunities created by the

Caribbean Basin Initiative (CBI). These countries also followed the requirements of lending institutions, such as the International Monetary Fund (IMF) and World Bank.

Central American nations have formulated short- and intermediate-run policies to solve the current crisis and to put the countries back on the road to economic growth. Unfortunately, the governing elites lack financial and political support and find it easier to follow short-term solutions which present their own additional problems (Ramirez, 1987). Generally, national development strategies are influenced by international organizations. Some of these organizations, such as the IMF, look at the short-run with price stability policies. Others, such as the World Bank, deal with the intermediate-run with SAPs (Ramirez, 1987).

Since the crisis of the 1980s, the IMF and the World Bank have imposed on underdeveloped countries a series of SAPs. Adjustment and stabilization programs were applied during the mid-1980s to the 1990s to bring the balances of payments under control in the Latin American nations. These included the idea of reactivating agriculture. The comparative advantage argument again rose to prominence. Developing nations that specialized in production where labor costs were lower than those encountered in the developed economies would stand to benefit from international trade.

Central development concepts for the 1990s in Latin America (Honduras is no exception), are structural adjustment policies, structural transformation, and agricultural reactivation. Donors such as the IMF, World Bank, and USAID propose stabilization and structural adjustment policies to reduce the high levels of inflation and the national deficit, as well as to permit national growth and the repayment of international loans. Some of the policies are reduction of public expenses, elimination of distorted prices, and liberalization of trade. They also propose the promotion of NTEs as part of trade liberalization. In the case of Central America, the Caribbean Basin Initiative was submitted to facilitate exports and build-up private enterprise. However, producers in the United States are trying to protect themselves via reduced quotas and increased duties to be applied to such products.

The strategy included manufacturing and agricultural NTEs. The role of agriculture, and NTEs in particular, was seen as a source of foreign exchange. On the negative side, agricultural NTEs could detract from the production of staple foods by competing for resources. Furthermore, structural adjustment and stabilization strategies may contribute to the rising costs of production in agriculture.

Structural transformation policies are designed to change the productive structure of the economy and therefore

facilitate its continued growth (O'Brien, 1991). This change is characterized by an economic system which transforms from one whose GNP is mainly or wholly dependent on agricultural production (GNP_a>50%) and whose labor force is mostly agricultural (L_a>50%) to one whose GNP and labor force is diversifying or transforming with contributions from all three sectors: manufacturing, services, and agriculture. O'Brien (1991) contends that several changes occur, such as those in the structure of consumption and the structure of production.

Structural adjustment policies are the remedial measures or programs of policy reform that countries follow to adapt their economic structure to the global economy after having received the shock of economic and financial imbalances during the crisis of the 1980s. The policies proposed are: (1) fiscal and monetary policies to reduce the budget and balance of payments deficits, (2) increased emphasis on the private sector, (3) the removal of biases against exports (including control over the exchange rate), (4) permitting domestic prices to move freely at international prices, and (5) reducing the public sector bureaucracy to make it more efficient. These policies are intended to hasten the recovery of the productive capacity, improve the use of resources, and promote investment.

Some researchers (Adelman and Taylor, 1990; George, 1988) have questioned the IMF-inspired policies because of

their effect on the poor. Others (de Janvry and Sadoulet, 1989) propose ways to take advantage of the policies. More will be said in next section about the role of agriculture and the IMF-policies. At this point in the discussion, several observations are nonetheless relevant.

George (1988) presents a position against the IMF-austerity and export surpluses policies. She contends that debt and dependency would reappear in the Third World because the economic model is self-generating. Instead of pursuing the same model with better management and having people pay a debt which is not theirs, a better answer is to develop social organizations that would play a "liberating" role.

Gladwin (1991) summarizes the arguments against structural adjustment with respect to Africa. One argument is that it has failed since it can neither eliminate the urban bias nor redistribute incomes to the rural sector. Agricultural production and incomes may decline, although SAPs are thought to eliminate urban bias, because policies show little sensitivity to micro-level village realities in which women producers do not have access to modern inputs of credit, fertilizer, land, labor, or extension advice. In Africa, where women are important rural producers, the supposedly gender-neutral SAP programs have favored men who grow export crops. This has been to the detriment of women

who not only have limited access to inputs, but who also grow basic food crops.

O'Brien (1991) presents additional criticisms regarding structural adjustments, formulated by the Economic Commission for Africa. These are: (1) the SAPs have been forced upon national governments; (2) social costs of adjustment have been ignored; (3) economic growth has not been restored, and stabilization policies often run contrary to structural adjustment policies; (4) markets are generally characterized by distortions, such as limited access to information and a failure to respond to market signals; and (5) SAPs cannot generate structural transformation because of major long-run development constraints, economic or social, which are not addressed.

O'Brien counters each of these arguments in turn. First, he notes that African countries adopted SAPs when everything else had failed; however, the economic and financial crisis had already resulted in a downward spiral of the African economies. Even though the IMF and World Bank had been important agents in the adoption of SAPs, these measures were required because of the domestic and external imbalances in the economies. Second, the time required to restore economic growth was miscalculated; thus, he agrees that the programs did not pay enough attention to social aspects. The initial emphasis was placed on correcting economic and financial imbalance and then, once

the economies began to grow, the emphasis would switch to the reduction of poverty. Moreover, the reduction in "urban bias" and stimulus to rural incomes were supposedly effects of the SAPs, and the World Bank has increasingly focused on the social components of SAPs. Third, evidence of the outcome of SAPs remains unclear. Data are mixed, but preliminary indications are that the economic decline has bottomed out, and that recovery is beginning. Fourth, SAPs support economic liberalization to achieve greater efficiency by relying on competitive market forces. What the SAPs seek is a balance between public and private sectors, rather than an overextended public sector. Finally, structural adjustment and structural transformation are different concepts. The first is used to reverse the downward spiral of the economy. The second concerns the restructuring of the economy to achieve growth and ultimately, to reduce poverty.

The Economic Commission for Latin America and the Caribbean proposes transformation of productive structures with equity (CEPAL, 1990; Gurrieri and Torres Rivas, 1990). Two of the criteria for the achievement of transformation are international competitiveness and industrialization. ECLA (CEPAL, 1990) views international competitiveness based on adoption of technology and increased productivity rather than on lower wage rates. They foresee an industrialization process based on innovation, telecommunication, and services

to provide adequate international integration and domestic forward and backward linkages.

Part II: The Role of Agriculture

Analysts and policy makers have placed varying degrees of importance on agriculture and manufacturing as the means for changing the social and economic conditions of nations (Eicher and Staatz, 1990; Lewis, 1986). The purpose of this section is to focus more specifically on the role of agriculture in the development process. Particular emphasis is given to the relationship between agricultural growth and issues such as poverty and land tenure.

Hunt (1989) summarizes the role of agriculture according to the emphasis placed on it by several development theories. Agriculture can affect development because of (1) diminishing returns, (2) the generation of surplus, (3) social equity and generation of employment, (4) the creation of demand for the outputs of the industrial sector, and (5) the generation of foreign exchange.

The mainstream literature dealing with agricultural development, as well as policy makers, followed ECLA proposals of implementing IS as the model for the Latin American nations. During the 1950s and 1960s, lack of capital and surplus labor in agriculture were major themes (Lewis, 1954). The agricultural development literature, in the 1970s placed greater emphasis on the role of government to promote the use of resources in order to improve

agriculture (Lewis, 1986). Agriculture would lead to an increased demand for purchased inputs (such as fertilizer) and consumer goods (such as shoes) being produced by the industrial sector (Johnston and Kilby, 1964; Mellor, 1976). Another role of agriculture was its ability to increase employment and reduce poverty (Adelman, 1986). During the 1980s to the present, a new interest has grown in agricultural NTEs as part of SAP policies. Financial institutions such as the IMF and World Bank observed that the Asian countries have developed following an export-led strategy as they produce NTEs (Artavia, 1987; Colburn, 1987a; Crosby, 1987; Labys and Lord, 1990). Thus, they urged Latin American countries to follow a similar strategy as a way to develop and procure the necessary foreign exchange to purchase required imports. Incentives increased when the United States implemented the CBI, which opened the market for Central American nations to produce NTEs.

Some policy makers and researchers consider export of primary products and nontraditional products to be a viable development policy. Other researchers object to certain aspects of agricultural export. For example, de Janvry (1981) notes that surplus value is transferred from an underdeveloped nation to a developed nation through exports. Sanderson (1986) observes that exports condition a nation's agriculture. Williams (1986) believes that export policies result in the destruction of a nation's resources, yet fail

to achieve the stability objectives for which these policies are proposed. Other researchers have considered the benefits received by different interest groups or producers (de Janvry, 1981; del Cid, 1973; Piñeiro and Llovet, 1986; Sheahan, 1987; and Williams, 1986). Researchers favor propositions which include either industrialization (CEPAL, 1990) or agriculture (Adelman and Taylor, 1990; de Janvry and Sadoulet, 1989; IICA, 1987) as key sectors for growth. No matter which proposition is addressed, the analyst cannot escape several key concerns. In the case of Central America, these include "issues of poverty" and "the agrarian structure" (Paus, 1988b, 2).

In his analysis of the extent to which primary exports can provide developing nations with a basis for economic development, Myint (1984) finds that in the modern sector, a mutual interrelationship exists between exports and economic development. First, the expansion of exports is believed to result in economic development: (1) comparative costs will increase direct gains from free trade, (2) increased foreign exchange will facilitate the purchase of imported goods and inputs, and (3) indirect effects will increase productive efficiency. Second, economic development causes export expansion by (1) increasing the quantity of goods sold on the international market, and (2) by increasing the demand for agricultural products in the domestic market. Finally, both export expansion and economic development are

associated with the level of investment financed by domestic savings and aid, and the establishment of appropriate domestic economic policies in the allocation of a nation's resources.

Myint (1984) also analyzes the traditional sector. He shows that peasant exports affect economic development when peasants produce and sell surplus products to buy cheap imported consumer goods, and when the traditional economic organization modernizes. Myint describes as strategic the position that peasant exports have in the domestic economic organization of underdeveloped countries. First, the modern sector has many auxiliary facilities, such as power, communications, transport, and access to modern banking, while the traditional sector faces constraints in these areas. Second, export products have access to better marketing, transport, and credit services than do cash and subsistence crops. Thus, underutilized resources could be better employed, based on the relationship between export expansion, cash crop production, and new peasant exports. Third, peasant exports could result in improved technology in both export and cash crops, increased productive efficiency of labor, and an improved information networks that link technology and available resources.

According to Mellor (1980), the required capital for economic growth can come from indigenous resources during the initial stages. However, at later stages of

development, foreign exchange becomes critical because the capital needed for economic growth must be imported. Agriculture is important during the advanced stages because of its contribution to foreign exchange earnings. Agriculture could reduce imports through expanded domestic production and through a change in consumption patterns, thus replacing imports with domestic products. At the same time, agricultural exports generate foreign exchange, which can then be used for industrial expansion. Also, increased foreign trade results in greater export and import tax revenues to be used by the government for development.

In addition, Mellor (1980; 1984; 1986) observes that the development of agriculture through technological change affects other sectors of the economy. Some of these effects are: (1) increased fertilizer requirements that result in an inorganic fertilizer industry; (2) improved management that requires higher formal education; (3) a larger nonagricultural work force that requires increased agricultural production; (4) a rise in farm income and purchasing power; (5) the development of accounting and calculating skills in farmers and their children; and (6) an improvement in the decision-making ability of farmers and their children.

Torres Rivas (1983) depicts the 1950s as the period in which agriculture, especially in terms of coffee production, was an important aspect of development for Central America.

During that time, exports and marketing of products resulted in increased savings, thereby increasing government revenues and the demand for other products. However, Torres Rivas notes that the development alternative of exporting agricultural products was already failing by the 1930s. He believes that, since the 1960s, external demand for certain agricultural products, such as cotton, sugar, and beef, has placed greater emphasis on the importance of the Central American region as a primary producer. Because the demand for these products is due to specific international circumstances, and not to planned diversification, the result has been greater dependency on the U.S. market rather than on structural change. At the same time, IS policy has displayed a number of weaknesses. It has been unable to absorb the labor force, and has done little to improve the standard of living of the population. Finally, it has actually increased industrial imports from the U.S.

Sanderson (1986), considers the differences between Latin American countries and their specific state policies and development strategies and points to the Mexican agricultural system as an example of the process of internationalization of labor. He describes the "new international division of labor" which integrates commodity markets as well as people and reproduces an advanced "transnational" organization of labor processes. Some processes of internationalization are (1) direct foreign

investment in agribusiness, (2) migrating labor forces, and (3) export processing in manufacturing. These processes place systemic pressures on a Third World country's trade policy, investment regulations, immigration policy, and rural development designs. At the same time, the developed economies adopted new forms of protectionism.

Sanderson also believes that the state apparatus tends to represent the international system. As such, the state is forced to select policies from a limited range of options. In the case of Mexico, the result was further integration into the international economic system. Sanderson finds that internationalization currently involves (1) changes in a country's rural area with the production of new commodities as it develops a system for export; (2) homogenization of production and technology between national and transnational agribusiness processors; (3) standardization of relations of production through transnational direct investment, technology transfers, and vertical integration and coordination; (4) a system of agricultural production dictated by the international market; and (5) a rural sector fully integrated into the internationally dependent economy.

For Sanderson, the current agricultural export enclaves are governed by internationally standardized technology. They are integrated via contracts and long term productive relationships and have direct impact on domestic markets.

Also, they have to survive in a politically complex environment. Sanderson observes that the technology of production is to a great extent determined internationally. It is not necessarily the most appropriate choice for national agricultural production. Therefore, the product becomes expensive in the domestic market. A typical situation is that scarce public resources are dedicated to externally oriented enterprises to the detriment of domestic producers and markets.

Sheahan (1987) finds that economic growth has improved living standards for many people, but that the benefits have been skewed. One of the effects has been the displacement of small producers from their land. Sheahan believes that for many technical and ownership conditions, exports can be detrimental to the poor. He finds that development is influenced by a country's policies which result in alternative paths of change. He presents three perspectives to interpret economic and social change in Latin America: early postwar structuralism, dependency analysis, and monetarism. Sheahan believes that these analytical systems are useful to understand certain aspects of change, but each by itself is an inadequate development strategy.

More recently, the SAPs support the reactivation of agriculture, emphasizing its role in development. Some analysts have, thus, supported or rejected the policies. In the case of Mexico some analysts believe that the

stabilization and adjustment of the economy could be reached by following policies which do not so negatively affect the poor (Adelman and Taylor, 1990). These policies include agricultural development as a key factor of success. Adelman and Taylor (1990) believe that a unimodal agricultural strategy, where the productivity of small-sized farms is raised, would prove more effective for growth and distribution than agricultural policies which do not support small farms. Thus, they favor the view that industrialization should result from the development of agriculture.

De Janvry and Sadoulet (1989) propose a strategy of economic recovery which considers agriculture as a key sector of growth. They view agriculture as important in itself, and not as a sector from which to drain the capital necessary for other sectors to develop. The role of agriculture is based on its capacity to generate foreign exchange, reduce inflation, and create demand. Agriculture has become a dynamic sector of the economy because of the appreciation of the real exchange rate. The strategy consists of: (1) farm-oriented rural development projects for the upper subfamily and family farms; (2) household-oriented rural development projects for the lower subfamily farms; (3) access to additional assets for the landless and subfamily farmers through land reform and colonization; (4) employment creation and labor market rationalization; and

(5) the promotion of backward, forward, & final-demand linkages with agriculture located in the rural areas.

The Inter-American Institute for Cooperation on Agriculture (IICA, 1987) recommends (1) promotion of agricultural exports and an understanding between nations, (2) changes in domestic policies dealing with technology and incentives, and (3) international cooperation and regional integration. Policies are needed to allow agriculture to become the key element of development. It is observed that emphasis should be placed on modernization of agriculture, efficiency gains, increased diversification, and linkage formation by promotion of agroindustrial growth.

Agricultural policies have thus played a different role within different theoretical traditions, and at various points in time in Latin America. An important aspect of the debate has concerned the role of NTEs, as an end in itself, and as a means to foster industrial growth. The section that follows narrows the discussion one step farther by specifically reviewing the issues associated with NTEs.

Part III: Nontraditional Exports

The study of NTEs can be analyzed from several perspectives. Literature on NTEs presents various issues, including: (1) outward- and inward-looking trade strategies (Balassa, 1971; Nixson, 1989; Ranis et al., 1984; Sheehey, 1990); (2) food versus cash crop production (Maxwell and Fernando, 1989; von Braun et al., 1989); (3) land tenure

(Maxwell and Fernando, 1989); (4) social instability (Williams, 1986); and (5) sustainable farming (Barbier, 1989). In the following sections, the above topics are addressed in terms of economic perspective, cash crops, land tenure, and emerging issues.

Economic Perspective

The literature abounds with cases of NTEs analyzed from the perspective of economic structure, trade, and macro- and micro-economic factors (ALIDE, 1979; Bhagwati and Krueger, 1973; CEPAL, 1978; 1978a; Paus, 1988a; Schydlowsky et al., 1983). The economic point of view begins with either the national or the producer level of analysis. The national level includes macroeconomic issues dealing with foreign exchange and balance of payments, trade, and the effect of exports on industrialization. At the producer's level, NTEs are expected to increase both income and employment.

The South American nations started promoting NTEs during the 1960s (Schydlowsky, 1972; Schydlowsky et al., 1983). The Central American countries have only recently increased their efforts to promote NTEs (Colburn, 1987; Hallauer, 1985; Paus, 1988a; von Braun et al., 1989). In Honduras a greater role for exports was not recognized until the beginning of the 1980s (Heffernan, 1988). The CBI opened possibilities for the Central American nations to export to the U.S. Not all the expected advantages of the CBI have been seen, however (Paus, 1988c). A positive case

for NTEs has been presented by von Braun et al. (1989) as they examine a study of frozen vegetables grown in Guatemala. In the case of Honduran plantain for export, Heffernan remarked:

> by using additional marketing channels for Honduran plantains, FEPROEXXAH was able to break the monopoly the intermediary had maintained and greatly enhance the producers' profitability. The new marketing strategy is one reason that plantain exports have increased from $0.2 million in 1980 to $2 million in 1985 (1988, 131).

From an economic perspective, Heffernan (1988) analyzes the macroeconomic and microeconomic factors which affect exports in Honduras. She observes, that although wages are low, the possibility of starting labor-intensive industries in Honduras is constrained by the overvalued currency and the high cost of credit. She also feels that other factors which help export performance in Honduras are good foreign market contacts and information, as well as quality control; negative factors that hinder export performance are poor firm management and the risk-avoiding behavior of Honduran entrepreneurs.

Several researchers (Felix, 1989; Webster, 1990; Zimbalist, 1988b) describe the important role that governments (hard versus soft) have played in the establishment of policies to implement development strategies. Zimbalist (1988b) presents the issue that an EP strategy should be combined with a renewed effort at IS, but in the case of a small economy should probably include the search for a larger regional market. A combination of

policies is found to be necessary because it is thought that exports alone, be they traditional or nontraditional, will not accomplish the job. Analysts are finding that the policies favoring NTEs should be part of an overall economic environment and policy framework which will not render EP ineffective (Paus, 1988b).

Another problem which analysts consider is that of the dependence of a nation on a single product or to one of the developed nations. Mexico is an example of the first case as it depends on oil exports for its development (Székely, 1989). In the latter case, Karp (1988) observes that the key exports in Belize depend upon factors such as international demand and prices, U.S. trade policy, and preferential treatment in external markets. One result of this dependence is, as Karp visualizes, the decrease in profit margin as other countries compete with each other in their exports to the main market, the United States. Paus (1988c) expresses that NTEs are a way of reducing dependence when the countries do not increase their food imports.

Some analysts consider international trade, which includes such issues as balance of payments, foreign exchange, formation of linkages, employment, and income. In this scenario, it is not common to find a view of the producer or the effects of trade on specific interest groups. One objective of the strategies is the establishment of linkages. Paus (1988c) notes that not all

of the NTEs create linkages that result in growth. Some investigators do discuss the microeconomic factors affecting enterprises (Paus, 1988a), noting the importance of management capabilities, quality of product, infrastructure, and network capabilities.

Sheehey (1990) found that many researchers have examined the relationship of GDP growth and exports using bivariate correlations and regressions and have found these to be positive. However, according to his own analyses, he suggests that these positive relationships do not shed light on the EP-IS argument. The positive relationships do not permit the claim that the competing economic resources should be used for export production rather than some other use. Sheehey finds that the production possibility frontiers in developing countries have not been reached. He suggests the possibility that rapid growth could result from policies which would allocate unemployed resources to all the major sectors of the economy.

Cash Crops

NTEs are also related to the debate about the allocation of scarce land to cash crops or food crops, and its impact on food security, foreign exchange, and farmers' income. Some researchers maintain that the use of scarce resources of land, foreign exchange, and capital for production of export crops may lead to the need to import food, which causes food security problems, uses foreign

exchange, and results in greater dependence. Paus (1988b) indicates that, even in the absence of export production, small-scale producers are often unable to meet the growing domestic demand for food. Therefore, food imports must increase, further exacerbating the balance of payments problem.

Others do not believe that there is a trade-off between producing for export and producing food products. Von Braun et al. (1989), in a study of the Guatemalan experience with NTEs, find that cash crops are complementary with food crops. The small-scale farmers who grow export vegetables also have higher yields in their staples. Von Braun et al. present some possible reasons for the results, such as the use of higher technology (e.g., fertilizers) and the improvement of management skills at the farm level.

Maxwell and Fernando (1989), in an extensive review article, present several definitions and issues in the cash crop debate. Analysts who favor the use of cash crops focus on the benefits in terms of growth, employment, and external balance. Those who do not favor cash crops focus on the costs in terms of income and land distribution, dependency, and food security. Maxwell and Fernando analyze growth as a result of outward-looking development and various growth mechanisms, such as "vent for surplus," comparative advantage, surpluses, and linkages. They present the problem of distribution as related to wealth, income,

access, and power. Cash crops serve as a mechanism to increase initial inequalities. Those who can produce cash crops are in a favorable position to benefit, which increases social differentiation.

Land Tenure

An issue which is important for the agrarian societies is that of land tenure. It is important because, as de Janvry and Sadoulet (1989) express, (1) the lack of access to sufficient land, and (2) low productivity of land are the leading causes of rural poverty. Several researchers discuss the importance of land ownership in relationship to economic inequality and social differentiation (Adelman and Robinson, 1978; Barraclough, 1970; de Janvry, 1975; 1981).

Public and private agencies that have national development as their main interest and that promote diversified products for export may find that social and economic impacts could differentially affect population groups. For example, Williams (1986) finds that NTEs such as cotton and beef produced ecological stress, increased the struggle for land, and benefitted some population groups over others, such as large producers but not peasants. Sanderson (1986) also found that with the expansion of agricultural exports in Mexico, the peasants were dispossessed of their lands.

In Honduras, Martínez et al. (1987) found that since the colonial period, the integration of Honduras into the

world market through exportation resulted in increased pressure to obtain land tenure, especially communal lands. Thus, families producing for subsistence were displaced to marginal land for agriculture. Although few studies exist of the plantain production area in Honduras, it is likely that a study would demonstrate the existence of a social structure characterized by increased pressure for scarce land as well as by inequitable distribution. This distribution may entail access to resources (such as capital, labor, and information), as well as the potential benefits and risks facing the users of these resources.

Paus (1988b) finds that a solution to the agrarian problem would include higher income to producers and better life conditions. She feels that the results would be seen as political stability, greater size of internal markets, enhanced linkages between the agricultural and industrial sectors, and reduction of food imports.

De Janvry and Sadoulet (1989) find that a strategy to reduce poverty must include elements that facilitate access to land, as well as programs to increase labor productivity, create employment, and improve real wages. Mellor (1989) finds that employment and increased returns to land will positively affect the landless and land-scarce. Therefore, nontraditional crops with high labor potential, an open trade regime, adequate domestic policies, and access to new

technology are all necessary for the small-scale farmers to be incorporated into the exchange economy.

Emerging Issues

Two issues which are becoming increasingly important, and which could affect other NTE issues, are social instability and agricultural sustainability. Both of these deal with problems of the environment. Social instability goes beyond the destruction of the land and concerns the result of the process. Agricultural sustainability attempts to suggest methods by which farmers can produce without destroying the environment in the long run.

According to Williams (1986), NTEs have negatively impacted upon the environment and have reduced the peasants' control over land. Such changes have led to social unrest in some countries. He observes that nontraditional products, such as cotton and beef during the 1960s, helped in the short run to expand and diversify foreign exchange earnings, expand the tax base for governmental revenues, and modernize agriculture. Yet, the production of such products led to ecological stress and took lands out of the hands of peasants. The outcome benefitted groups such as growers, landlords, bankers, exporters, suppliers of inputs, and multinational corporations. Williams believes that the new policy to promote agricultural NTEs would generate instability via the same mechanism. Social tensions would result with the intensification of struggles for land,

stronger military apparatus due to increased military aid, and more sophisticated grassroots organizations.

It is believed that the socioeconomic needs of people put pressure on natural resources, which results in environmental degradation (Quesada-Mateo and Solís-Rivera, 1990). A strategy of sustainable development is proposed as the solution. This strategy would integrate conservation and socioeconomic development elements. In agriculture, the strategy entails ecologically sound and profitable farming systems and programs. Quesada-Mateo and Solís-Rivera indicate that research on nontraditional agricultural crops is important to ensure that they are produced under adequate environmental and economic conditions.

Barbier (1989) deals with cash crops and food crops in relation to sustainability in Indonesia. He concludes that production, whether for food self-sufficiency or export, would similarly affect the environment. The implementation of a policy framework for agriculture which includes natural resource management concerns is one of the key requirements for the development of sustainable agriculture.

Summary and Hypotheses for Further Research

Import substitution has been criticized as a development strategy because it has resulted in increased imports, failed to increase foreign exchange earnings, failed to generate employment, and has unequally benefitted

elite groups. As an alternative, some countries have proposed policies promoting the export of nontraditional agricultural products. Stimulating agricultural exports is expected to improve (1) the allocation of resources, (2) access to institutional services, (3) technology, (4) employment, (5) income, and (6) information networks. It is also expected to generate foreign exchange, contribute to the fiscal balance, and increase the GNP. Agricultural NTEs are also expected to encourage entrepreneurship and innovation, and to contribute to social stability. However, agricultural products can become expensive because of the technology used and marketing groups could benefit more than production groups. Such agricultural NTEs can also result in unequal distribution of benefits and resources, such as land, credit, and public services (Williams, 1986). In light of those observations, it is important to consider the extent to which various groups of people receive differential benefits from participation in the international market for exotic agricultural commodities.

There are a number of potential impacts or consequences that could be generated by increased emphasis on NTEs in an agrarian society. The literature identifies some of the negative effects, as well as those expected to have positive

consequences for an agrarian society. Some anticipated positive outcomes are:

1. increased foreign exchange earnings;
2. higher income for exporters and producers involved in the international market;
3. greater competition between producers to obtain access to credit and local/regional markets; and
4. the formation of backward and forward linkages, and the consequence increase in employment.

Some negative outcomes include:

1. shortages in staple foods, as seen in the Mexican agricultural system (Sanderson, 1986);
2. the concentration of land and other resources in the hands of some producers; and
3. lower income for farmers who cannot export.

In the case of NTEs in Honduras, the central issue is the determination of social and economic consequences of these exports. Some variables that are considered important are: investment, employment opportunities, macroeconomic policies, distribution of land ownership, foreign influence, access to education, access to resources, and integration into the political system (Sheahan, 1987; Torres Rivas, 1983; Webster, 1990).

Virtually all Latin American countries, regardless of the size of their economies, have pursued patterns of development and have followed the IS and EP development

strategies proposed by both policy makers and analysts. What has yet to be done is to evaluate the social and economic impacts of NTEs. In this case study, on the producers of plantain, a set of variables was selected based on their recurrence in the development literature. Three types of indicators are relevant to the comparison of exporters and nonexporters of plantain in the Baracoa area of Honduras: (1) the standard of living of the plantain producers, (2) their ownership and use of land and capital, and (3) their access to institutional resources.

One of the goals specified by policy makers and analysts, as they propose IS and EP development strategies, is to increase family income. Improved social conditions are presumed to derive, at least in part, from this increase in income. However, during the 1980s the availability of good quality social services--such as rural electrification, potable water supply, and sanitation systems--declined. Under these circumstances, a higher income is of little benefit although it is possible that greater income would provide the producer with access to alternatives, e.g., a generator on the farm in lieu of a public power network.

> The first research hypothesis is that higher income generated from plantain production for export (as opposed to production for domestic consumption) leads to an improved standard of living for the producer.

In rural Honduras, the ownership of capital and land resources is a critical indicator of a person's wealth and productive assets. The small size of farms and the lack of

productive assets limit both quantity and quality of production, which in turn brings about disproportionate income distribution among producers. Growers lacking adequate productive assets cannot produce at the level of technology needed for export. Their main alternative is to rent equipment and facilities, which increase their costs and reduce their net income. Growers having adequate access to land and capital are capable not only of obtaining higher yields, but also of using a better level of technology for export. They also potentially provide employment opportunities for others.

> The second research hypothesis is that the export of plantain allows producers to increase their capital and land assets.

Finally, nations restructure their policies, programs, and projects to enhance or hinder access of producers to institutional resources. Some initiatives provide access to credit, extension, and inputs which allow the modernization of farms and greater efficiency in production. Other programs and projects redistribute government revenues and improve social conditions (e.g., housing and nutrition projects). This greater access to public goods, whether for production or for improvement of basic social conditions, means a reduction of poverty.

> The third research hypothesis is that the growers who produce plantain for export have greater access to these institutional resources.

Before addressing these questions, it is first necessary to provide background information about the research setting of Baracoa. Chapters 3 and 4, therefore present the background information and descriptive analysis of the plantain industry in the Baracoa zone of Honduras, which is the focus of this study.

CHAPTER 3
SETTING, BACKGROUND, AND RESEARCH DESIGN

Setting

In Honduras, plantain is produced primarily in three areas within the Sula Valley: Progreso, Urraco, and Baracoa.[1] The geographical area of interest in the present case study is a coastal land in the northern part of Honduras. The plantain zone comprised 17 sub-areas, (Table 3-1) that mainly lie within the limits of Puerto Cortés County in the fertile Sula Valley within the Departamento of Cortés. Because of its proximity to the main town of Baracoa, the Plantain Program in the FHIA calls it the Baracoa zone. The plantain farms in this part of the country began when the banana companies abandoned the area and distributed the land to unemployed wage laborers, supervisors, and migrants.

In Central America, plantain is usually produced in a farming system interspersed with bananas, coffee, and other crops (ICAITI, 1976). In the Baracoa zone, however, plantain is produced as a sole crop under various scales of production. Some are medium-sized commercial farms. Others are small cash crop farms. Agricultural planners classify

[1] The research took place during the end of 1987 and the beginning of 1988.

TABLE 3-1. SUB-AREAS IN THE BARACOA PLANTAIN ZONE

SUB AREA	NUMBER OF PRODUCERS
45 1/2 (sic)	20
Botija	33
Calán	39
Calán/Mangos	8
Caoba	34
Cedro	25
Fragua	39
Guanacastal	91
La Junta	19
La Pava	45
Melcher	22
Merca Río	16
Ocote/Boquerón	20
Paleto	18
Remolino	20
Roble	43
Ticamaya	102
TOTAL	594

Source: FHIA, Programa de Plátano.

plantain areas according to the density of farms. Baracoa is classified as a dense area since most of the small, medium, and large farms are found side by side. The total number of farms in the zone is not precisely known. At present, the most complete list that exists was compiled by the two main cooperatives, the Marketing Cooperative of Independent Plantain Producers of Honduras (COCOPLAINH) and the Regional Agricultural Cooperative of Independent Plantain Producers of Honduras (CARPHIL), in conjunction with FHIA. The list shows that the zone has 667 plantain producers working approximately 2,201 ha. Thus, Baracoa has 10.8% of the Honduran producers and 21.0% of the total area in plantain production.

This industry is formed by the successive activities of production, processing, and marketing. The participants in these activities are producers, middlemen, input salesmen, and private and public service agents. Furthermore, these participants are herein classified as being part of either the export and local/regional sub-sector, or only the local/regional sub-sector, according to the destination of the fruit.

Background

The Beginning of Plantain in Baracoa

The following pages describe the activities encountered within the plantain area. Much of this description comes directly from discussions with key informants and from

secondary sources. Although plantain and banana production in Honduras both began at approximately the same time, plantain is just now being viewed as a diversification product. This is partly due to increased demand in the United States (Table 3-2). As a nontraditional fruit for export, it is believed that plantain could facilitate rapid economic growth, thereby enhancing political stability, and could create investment opportunities and generate employment for families. The classification and packing of plantain for export are family activities.

Honduran plantain production for export is an activity conducted mainly by small-scale farmers and farmers' organizations. At the same time, multinational corporations control the marketing channels of agricultural commodities for export and thus obtain the largest percentage of the revenues (de Janvry, 1981). The Tela Railroad Company (TRRCo), a subsidiary of United Brands, owned the land now comprising the Baracoa zone. During the 1950s the company had banana plantations in the area, but due to constant flooding, the area was not considered one of their best landholdings. The company reduced the area of the banana plantations and allowed some workers to settle.

In 1959, a TRRCo worker planted the first plantain farm. The company left several watchmen (guardabosques) to protect the land against intruders. These men were also responsible for renting the land, collecting payments, and

TABLE 3-2. U.S. IMPORTS OF PLANTAIN FROM HONDURAS AND ALL SOURCES, 1970 TO 1989

	PLANTAIN FROM HONDURAS		PLANTAIN FROM ALL SOURCES	
YEAR	FRESH (LBS)	PREPARED OR PRESERVED (LBS)	FRESH (LBS)	PREPARED OR PRESERVED (LBS)
1970	13,490,278	6,000	91,639,588	162,434
1971	20,075,289	0	87,086,731	87,842
1972	20,318,008	1,333,815	105,090,314	1,960,939
1973	26,485,050	2,590,684	121,560,214	3,381,997
1974	21,523,504	0	135,209,216	2,513,638
1975	0	0	127,540,205	2,544,206
1976	13,268,852	1,509,096	153,537,027	3,658,409
1977	2,763,439	2,664,430	139,161,883	4,834,841
1978	2,122,912	1,836,625	151,921,727	5,417,412
1979	0	1,933,394	158,315,592	5,312,799
1980	0	2,375,628	155,224,803	5,307,610
1981	0	1,052,099	166,674,461	5,433,644
1982	940,026	1,229,040	180,431,569	5,219,360
1983	0	1,215,100	187,670,853	5,189,205
1984	1,481,930	1,168,650	192,644,701	4,470,258
1985	22,867,511	2,363,544	211,167,213	4,874,336
1986	29,957,015	2,152,550	234,250,890	5,219,040
1987	19,035,882	4,189,024	225,262,427	5,134,413
1988	14,512,620	2,007,816	239,500,731	6,003,651

Source: U.S. Bureau of the Census, various years.

supervising the area to prevent the planting of permanent crops other than maize. Slowly, between 1968 and 1970, without the company or the watchmen noticing, some renters began planting permanent crops, including plantain, until they managed to take possession of the land through long-term settlement on it.

After 1972, the National Agrarian Institute (INA) gave land permits to producers in the area. The banana company did not leave the area completely, and in fact sporadically purchased plantain for export from the producers. In 1974, after Hurricane Fifi, this area was devastated so the company was forced to reduce their exports. By 1987 the company had managed to establish a system in which the main intermediary for plantain export in the Baracoa zone would use the marketing channels of the company to send the plantain to the U.S. and Great Britain.

Plantain Markets and Distribution

The plantain market of interest consists of Honduras, other Central American countries (especially El Salvador), Great Britain, and the U.S. Plantain exported to the foreign market (Great Britain and the U.S.) must meet high standards. The local/regional markets (mainly Honduras and El Salvador) accept plantain of lower quality.

Honduras' export is closely tied to the U.S. market and to Ecuador's and Colombia's production. Prices in Honduras are partly a function of the quantity of fruit that Ecuador

sends to the U.S. Not only have export prices of plantain varied, but also the quantities produced in Honduras have varied over the years. During the 1970s, Honduras was the main Central American country exporting plantain; in Latin America, it was third after Ecuador and Colombia. Total plantain exports from Honduras in 1973 were 22% of the United States imports from all sources (Table 3-2). Exporters and agencies in Honduras perceive a great potential in plantain production because the market continues to grow. They believe that adequate technical assistance and resources will bring about increases in production quantity and quality for export (FHIA, 1986; Morales y Vasquez, 1983; Murray et al., 1977).

Several aspects must be considered prior to promoting plantain as an export product. First, a drastic shift to the export market could reduce the amount remaining for use within the Central American market. Second, such a shift could bring about structural changes within the local/regional transportation and marketing systems. Third, small-scale farmers might be selling the product locally in order to reduce their risks, or to improve their cash flow (Webster, 1990; Worsley, 1984). Fourth, world plantain prices could fall as a result of increases in world production with negative effects on the Honduran balance of trade. Finally, as production increases, a larger quantity of surplus fruit could result in greater competition for

local markets and even lower prices locally. The farmers who produce for export might also have a better quality of plantain for the domestic market, thus making it harder for other farmers to compete.

Obstacles to Production

In 1974, Hurricane Fifi destroyed 50% of the production area in Honduras (Hernandez et al., 1982; Morales y Vasquez, 1983) and reduced the quantity of plantain. At that time Black Sigatoka was propagated. It is a fungal disease that results in smaller, blemished fruit, and a shorter ripening period. This disease later took its toll on the quality of the fruit. As a result of the hurricane and the disease, exports to the U.S. fell to a low level during 1979. Total exports were 3.3% of total production, with the lowest exported quantity in a decade, 2,099.3 metric tons (M.T.) (Table 3-3). Even though current production has increased, the number of exporters has diminished due to the difficulties of maintaining a minimum production of export-quality plantain (FHIA, 1987). Banana companies have historically exported plantain as a secondary product. They are now quite concerned about the control of Black Sigatoka and the way in which the disease, if left uncontrolled, could raise the cost of banana production (Murray et al., 1977).

Access to technology (such as refrigerated containers, packing equipment, and phytosanitary control) appears to be

limited to certain participants in the plantain industry. The technology that could enable additional farmers to produce for the more lucrative export market has not been made available to plantain farmers at large.

A number of factors limit (or even prevent) the participation of the small-scale producer and middleman in the export of plantain to foreign markets. One such factor is the need for refrigerated transportation and storage containers. Only large-scale production and marketing, with adequate capital and management organization, could take advantage of the opportunities in foreign markets. A study by the Central American Institute for Research and Industrial Technology (ICAITI, 1976) found that refrigerated containers are commonly used in Central America to receive and store the produce until the container is ready to be shipped. These containers are substitutes for the storage facilities that are lacking in the area. Trucks of different sizes are used within the local/regional markets, in lieu of refrigerated containers.

A second factor in the process of preparing plantain for export is the use of specific cartons to pack the product. Only those who can obtain these cartons will have access to higher export prices. In fact, CARPHIL experienced serious problems in obtaining the proper cartons for export, which nearly led to the dissolution of the cooperative. Plantain destined for the Central American

TABLE 3-3. PRODUCTION, EXPORT, AND CONSUMPTION OF PLANTAIN IN HONDURAS

YEAR	TOTAL PRODUCTION (M.T.)	DOMESTIC CONSUMPTION (M.T.)	EXPORTS (M.T.)	VALUE F.O.B. (1,000 LPS.)
1973	119,505	93,302	26,203	3,452
1974	51,483	34,571	16,912	2,313
1975	54,057	51,210	2,847	267
1976	56,760	43,991	12,769	2,422
1977	59,598	50,170	9,429	1,304
1978	62,578	57,212	5,366	720
1979	64,096	61,997	2,099	392

Note: M.T. = Metric Ton = 1,000 KG (kilogram).
Source: Morales y Vasquez, 1983, 19.

market are purchased on the farm and transported in bulk to various distributors who then sell the fruit to small-scale market vendors.

A third factor that prevents small-scale producers and middlemen from exporting is the phytosanitary process, which is both difficult and expensive. This is especially true for the control of Black Sigatoka. This disease is a problem for both the middleman and the exporter. It is more important for exporters due to the shortened ripening period that leads to losses during the time needed for transport by sea. Since phytosanitary control exists mostly for export purposes, farmers who, for any reason, cannot export will usually not employ control measures for Black Sigatoka. Similarly, farmers who cannot control for Black Sigatoka do not export. Therefore, a lower quality product is sold to the Central American consumer.

Control over the phytosanitary process itself is also necessary. In Baracoa, airplanes were previously used to fumigate some areas affected with Black Sigatoka. However, some farmers replaced aerial spraying with the use of motorized sprayers that they purchased or borrowed. The National Plantain Program (PNP) of the Secretary of Natural Resources convinced farmers to use motorized sprayers rather than planes. Now, only the exporters use aerial control.

FHIA has found that technology currently in use could be improved (FHIA, 1985; 1986). For example, a committee of

exporters and producers in 1977 asked the government for help in the control of Black Sigatoka. In 1986, FHIA indicated that adequate control of Black Sigatoka was still lacking. During 1982 and 1983, INA and PNP reported that their efforts had helped increase production (Hernandez et al., 1982; Morales y Vasquez, 1983). However, such increases had been brought about mainly by the PNP in areas that produced essentially for export (FHIA, 1986). In 1982, the PNP saw the need to control nematodes (Hernandez et al., 1982). Contradictory evidence presented by FHIA in 1986 suggested that nematodes were not a problem worth controlling (FHIA, 1985).

A fourth factor which limits production for export is the quality of the land and the drainage problems in the area. One difficulty in the plantain area of Baracoa is flooding of the Ulua and Chamelecon rivers. Most of the producers have land affected by flooding and the drainage canals built by the TRRCo are rapidly deteriorating.

Next chapter presents a more detailed description of the plantain area of Baracoa. Specifically, the point of view of the producers is considered as basis for the analysis.

Research Design

Sample and Data Collection

Both primary and secondary sources were used to gather data for the present study. Primary sources were key

informants, producers, and on-site visits. Secondary sources were publications from several public and quasi-public agencies. These sources are discussed in greater detail below.

In order to improve our understanding of the social and economic impacts of agricultural NTEs, Chapters 4 and 5 describe and analyze the plantain industry in the Baracoa zone of Honduras. The data used to describe the plantain industry, the history of Baracoa, the existing groups and their activities, and the role of cooperatives, were obtained using (1) informal interviews of key informants (Gorden, 1969); (2) formal interviews of plantain producers; (3) on-site visits to observe production, processing, and marketing activities; and (4) secondary sources. Data from secondary sources were scarce, but were found within some descriptive studies of the industry's activities prepared by agencies such as FHIA, FPX, and Secretary of Natural Resources (SRN). Other secondary data were gathered from the cooperatives' records.

Key informants were selected through a snowball sampling technique. Several residents in the area, employees within the FHIA Plantain Program, and members of the cooperatives in the area were asked to provide names of persons familiar with the area and the plantain industry. Seven informants were then interviewed using an informal questionnaire (Appendix A) to guide the conversation. The

number of informants was determined by the similarity of the responses provided. These interviews were usually recorded on a tape recorder. After each interview the data were transcribed and selected for further clarification and follow-up questioning. The formal survey questionnaire was completed and improved using valuable insights that were gained during the process of interviewing key informants. A pretest was conducted with individuals who did not enter the sample, to ascertain the reliability of the instrument. One person from the plantain zone of El Progreso and two persons from Baracoa participated in the pretest.

The questionnaire shown in Appendix B was used to gather data for comparing producers. Respondents were selected by means of a random sampling of farmers within the Baracoa zone. The survey instrument included questions about activities performed in the plantain industry, and contained questions designed to test several hypotheses derived from the literature.

The sample of producers was taken from a list provided by the cooperatives (COCOPLAINH and CARPHIL) in cooperation with FHIA. During the initial stages, the sample was to consist of a disproportionately stratified selection including at least 100 producers who did not sell for export and 100 producers who sold for export (Babbie, 1973). The original list proved to have a number of inadequacies. First, the data were outdated; some producers had left the

area, some had died, and others were no longer producing plantain (one producer had even lost his land due to flood problems). Second, the classification system used by the cooperatives and/or FHIA was misleading: producers had been classified as either "exporters" or "nonexporters", when in fact some "exporters" were not selling for export and some "nonexporters" were selling for export.

Of the 200 farmers selected from the original list, interviews were completed with 151 producers. The sample consisted of 59 producers who exported, 84 producers who did not export, and eight missing cases.[2] The group classification variable EXP was defined to be "1" for exporters, "0" for nonexporters, and "999" for the eight missing cases. Throughout the data, failures to respond, or highly dubious responses to particular questions, were treated as MISSING VALUES (coded "999").

Some difficulties arose in the process of data collection that potentially may bias some of the results. The problem resulted because of an unfortunate incident that occurred in the area just prior to the interviewing. A few weeks previous to the study, personnel from a government office had been in the area questioning the producers about the quantity of land they had, the production they obtained,

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[2] For example, two producers had to be left out of the analysis because their production figures, in terms of quantity of plantain per hectare, were not credible. Another producer terminated the interview upon reaching the section on production information.

and their estimated income. The public officials requested this information by telling the producers that it was needed to help them legalize their land tenure. The producers, who are often uncertain about the legal situation of their farms due to the process in which the farms were acquired, were anxious to secure their property documents and provided the information. Instead of receiving the documents they were promised, they received a charge for back taxes, that they thought they had been paying over the past several years. Their reluctance to be completely candid afterward is therefore understandable. Every effort was made to inform the respondents as to the purpose of this study and thereby offset the potential effects of this unfortunate incident. It is reassuring to note that the estimates of the amount of land in plantain production derived from this study (average of 3.35 ha) is quite close to other independently derived estimates (Murray et al., 1977).

The export producers were oversampled. According to the original list, the number of exporters was 223 (33.4%) and the number of nonexporters was 444 (66.6%), for a total of 667 producers in the Baracoa area (Table 3-4). To test for statistical significance, the cases in the sample were weighted to match the probability of finding an exporter versus a nonexporter in the population (Wright, 1979). The adjusted weight used was 0.69 for the exporters and 1.00 for

TABLE 3-4. WEIGHTING OF EXPORTER AND NONEXPORTER PRODUCTION GROUPS: POPULATION AND SAMPLE

	POPULATION		SAMPLE				
PRODUCTION GROUP	P	PERCENT	n	SAMPLING FRACTION	PERCENT IN SAMPLE	WEIGHT	ADJUSTED WEIGHT
Exporters	223	33.4	60	0.27	42.0	3.72	0.69
Nonexporters	444	66.6	83	0.19	58.0	5.35	1.00
Grand Total	667	100.0	143	0.21	100.0		

Note:
P = cases in population
PERCENT = P_i/P_{gt}
i = respective row (production group)
gt = grand total
n = cases in sample
SAMPLING FRACTION = S.F. = n_i/P_i
PERCENT IN SAMPLE = n_i/n_{gt}
WEIGHT = P_i/n_i
ADJUSTED WEIGHT (minimum) = $S.F._i \div S.F.$

the nonexporters, which left the sample size as 41 exporters and 83 nonexporters, for a total of 124 cases (Table 3-2).

The primary data were collected personally by the author with some help from three persons. Two were high school students and one was a university undergraduate. After the data collection period, the data were prepared for analysis, coded, entered into a microcomputer for further management and editing, and tabulated.

Data Analysis

The analysis was based on a single sample which initially treated all producers as belonging to one group. This permitted the information provided in the interviews to be used as the basis for classifying producers as either exporters (EXP=1) or nonexporters (EXP=0). To qualify as an exporter, the farmer had to meet two conditions: (1) the producer was currently selling for export and (2) the producer sold for export at least 12 consecutive times during the year. A producer had to meet the two criteria to be considered as an exporter. These criteria were used because it was assumed that the benefits of exports would not be evident if the producer had not been producing for export continually for some time.

Most of the producers in the area have sold plantain for export at least once. It should be noted that only 9.6% of the producers have never sold their production for export. However, selling a few times for export does not

mean that one has produced for export. The technology used for plantain production for export is more sophisticated than that used for plantain production for the local/regional markets. The most important technological activity in the area is control of Black Sigatoka, which requires the use of expensive chemical inputs. It is not common for producers to have an adequate control program with continuous application of these fungicides. Only the producers who sell for export and some technology-conscious nonexporters follow an adequate system of Black Sigatoka control.

CHAPTER 4
PLANTAIN PRODUCTION IN HONDURAS

Institutional Framework

Baracoa has a complex institutional structure which is intended to facilitate plantain production and export. Several public and quasi-public extension and research agencies work in the area. The PNP provides extension (especially concerning the phytosanitary process) and research. The National Institute of Professional Training (INFOP) and FPX are responsible for marketing, organization, and training. The INA works with agrarian reform groups and helps in the organization of cooperatives. The FHIA conducts research and provides advice to individual farmers and cooperatives. Activities in the area are coordinated by a committee of representatives from participating agencies and cooperatives.

Two of the most important institutions in the area are the cooperatives COCOPLAINH and CARPHIL. They play a basic role in the production of plantain, whether or not for export. Each cooperative has influence over a part of the plantain area and only at the borders of the area are some producers members of either one or both cooperatives. The sample included 62 (52.1%) members of COCOPLAINH and 31 (26.3%) members of CARPHIL. The members of COCOPLAINH have

more land of better quality[1] than do the members of CARPHIL. The average size per farm was 6.61 ha, with an average of 4.17 ha in plantain for the COCOPLAINH producers, and 2.61 ha farm size with 2.47 ha in plantain for the CARPHIL producers.

The goal for most plantain producers is to sell for export and they take advantage of the opportunity when intermediaries come to the area trying to establish an export system. Since their creation, both COCOPLAINH and CARPHIL have been searching for export opportunities. COCOPLAINH has had a stronger relationship with the TRRCo than does CARPHIL, and has had greater opportunities to sell for export by means of the company's initiative. Twice as many producers from COCOPLAINH are ex-employees of the TRRCo than are those of CARPHIL. It is significant that COCOPLAINH has managed to develop a strong relationship with an intermediary that has been in the area for several years. The cooperative allows the intermediary to work in its installations; he uses part of the warehouse to store packing boxes for the fruit, as well as fertilizer for those producers who wish to buy from him. Some of the employees in the cooperative's office also work for him. The banana company's railroad sidings, which are located within the

[1] Land quality is discussed in terms of the most salient feature which affects plantain production in these northern lands, namely, drainage and flooding problems. Land quantity is discussed in terms of the area actually in plantain production.

installations, serve to keep the refrigerated containers that store and transport the product. The intermediary was building a huge water tank to be used during aerial control of Black Sigatoka. On the other hand, CARPHIL has had to search for long-term export opportunities and has faced obstacles several times either because the intermediaries were not capable of establishing an export system and achieved only limited market access, or because the producers could not provide adequate quantities of export-quality plantain. The intermediary who buys plantain from the COCOPLAINH's members also buys plantain from CARPHIL's members. However, for several reasons such as proximity to the refrigerated container, type of organization, and access to aerial spraying, he prefers to buy from COCOPLAINH's members rather than from CARPHIL's members.

The cooperatives play other roles in the production, processing, and marketing of plantain (Table 4-1). They facilitate the use of technology by selling inputs (such as fertilizer and insecticides), by renting equipment (such as motorized and manual sprayers), and by facilitating credit (such as loans obtained by the cooperative, as well as personal loans). Cooperatives may help the producer to gain access to better quality housing. In fact, in the area of influence of COCOPLAINH, producers with the support of the cooperative managed to coordinate with a home-building

TABLE 4-1. FACILITATING ROLE OF COOPERATIVES, PERCENT

DESCRIPTION	COCOPLAINH ALL n=124	COCOPLAINH EXPORTER n=41	COCOPLAINH NONEXPORTER n=83	CARPHIL ALL n=124	CARPHIL EXPORTER n=41	CARPHIL NONEXPORTER n=83	χ^2
Obtain Chemicals							
Fertilizer	38.4	73.3	20.8	27.1	3.3	39.0	0.001
Fungicide	6.8	3.3	8.5	10.8	3.3	14.6	0.001
Other chemicals	1.4	1.7	1.2	6.0	3.4	7.3	0.566
Herbicide	36.0	60.0	24.1	26.0	3.3	37.3	0.001
Obtain Equipment							
Water pumps	0.0	0.0	0.0	0.0	0.0	0.0	0.238
Sprayers	5.8	15.0	1.2	0.8	0.0	1.2	0.011

Note: The crosstabulation for this (and other tables) are combined and not all the categories for one item are included here. Thus, the probability of χ^2 can be reported for items which include 0.0% in all categories; e.g. water pumps.

institution and constructed a housing project. The CARPHIL has an education committee and works with some public agencies to have agents provide seminars and courses for cooperative members. Both cooperatives have a system to buy plantain from the members and sell it in the local/regional market, thus providing higher returns to the members. The cooperatives represent their members in matters related to land tenure, production, and marketing.

The institutional framework also includes a number of private entrepreneurs who provide services in the area. This includes farm input salesmen, middlemen, truck owners and drivers, owners of refrigerated containers within the international market system, and a company that provides pilots and airplanes to fumigate against Black Sigatoka. During the period of the study, between the end of 1987 and beginning of 1988, the area had two intermediaries for export,[2] three main regional middlemen, and about 50 small middlemen buying plantain.

Intermediaries, banana companies, farmers, and farmers' organizations have strongly voiced their concerns about plantain to several public and quasi-public agencies which provide tangible resources (e.g., pesticides), and intangible resources (e.g., technical assistance and

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[2] One intermediary established in the area quite some time ago and works mainly with members of COCOPLAINH. The other intermediary is beginning to buy for export from any plantain producer who has plantain of export quality.

research). Exporters and cooperatives have been concerned with the trend that plantain production has followed and try to provide access to the technology which would improve the quantity and quality of plantain.

This section presented the institutional framework in which the plantain producers work. Next section will explore some social aspects to better understand who are the plantain producers.

The Plantain Producers

Social Aspects

Although most of the producers live in villages within the plantain sector, some of the large-scale producers live in nearby San Pedro Sula, La Lima, or Puerto Cortés. Most of the producers have been in the area for more than ten years, do not have an alternate place of residence, and are not planning to move away from the area for the present time. About two thirds of the producers have not previously worked with the banana companies. However, more exporters (40%) have experience working with the banana companies than do nonexporters (32%). At least 25% of the producers worked with the TRRCo and most of these in either banana or plantain.

Most of the producers are either members of a cooperative or at some point in time have been members of one. Although selling for export is not necessarily tied to membership in a specific cooperative, at least 85%

(χ^2=.001)[3] of the exporters are members of COCOPLAINH. While some of the nonexporters (34.6%) are members of COCOPLAINH and some (38.5%) are members of CARPHIL, at least 25% are not members of any cooperative. One of the most important reasons for the nonexporters not to be members of a cooperative is that they find that cooperatives have problems in marketing the product. Most of the producers did not want to provide reasons why they did not participate in cooperatives. This seems to be a touchy subject because cooperatives do experience some degree of inter-personal conflict.

In general, producers have similar family conditions. Most of the producers had not had previous marriages and now live either in free union or are married. A higher percentage of nonexporters than exporters are single. However, "single", "free union", and "married" are not well defined concepts in the rural area of Honduras. The average number of persons living in a house is seven. These people could be nuclear family members, extended family members, or hired workers. The household generally includes the father and mother, young sons and daughters, and perhaps grandparents, single daughters with children, and other relatives. Around 90% of the households do not have any pregnant women. Most of the mothers do not work outside the

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[3] For short, χ^2 is used rather than the probability of χ^2 in the text and tables of this dissertation.

house, and take care of their small children if they have any. However, the women do own chickens or pigs, and some of them prepare food to sell and have other income-earning activities. Most of the families do not receive any remittances, but 12.9% of the nonexporters receive money from family members living elsewhere. Also, the producers often have sons and daughters living in another place but do not have to send them money. Most producers neither receive nor send money from or to their family members.

Housing conditions suggest a tendency for exporters to be better off than nonexporters. Some of the producers have access to electrical generators for lighting their homes. It is more common for the exporters (18.4%) to use their own generator or someone else's than for the nonexporters (3.6%; χ^2=.027). However, most producers use gas lamps, candles, and oil lamps. At least one third of the producers do not have any kind of sewage disposal services. About half of them have latrines and between six percent for the nonexporters and 16.7% for the exporters have toilets in their houses. Producers use a number of means to bring water to their houses. The main difference between the exporters and the nonexporters is that 46.7% of the exporters have a water well on their property, while the nonexporters are more evenly distributed between sources, such as a river or stream (22.9%), a water well on their property (25.3%), or household plumbing (20.5%).

The main construction material for home-building in the area is wood. The second in importance, and statistically significant (χ^2=.018), is bahareque (mud and sticks) for the nonexporters (28.4%) and cement for the exporters (21.8%). The most common material for the roof is zinc (corrugated metal). Most of the producers have houses of more than one room. Exporters use better construction materials for their houses than nonexporters. More is to be said in next chapter about the difference between exporters and nonexporters in terms of the quality of construction materials that they use for their houses.

At least half the producers' families did not have members that had been sick during the year. About one fourth of the producers had one sick or extremely sick family member during the year; the average number of sick persons during the last year was 0.57 and 0.67 (χ^2=.547) for exporters and nonexporters, respectively. The exporters visited the doctor an average of three times per year, while the nonexporters went twice, but differences were not statistically significant.

At least 30% of the producers have no formal education, about 40% have finished the third grade, and about 6.2% have gone beyond sixth grade. The average exporter finished the third grade; a few exporters have university degrees. The average nonexporter has a second grade education; only one nonexporter completed high school. Most producers were not

pursuing further studies at the time, since the average producer was 46 years old. Few producers have access to continuing education even if they wanted to further their studies. While all producers have low formal education, exporters show that they have achieved a higher level of formal education than do nonexporters.

Some schools in Honduras have food programs where snacks are provided to students. The schools in the Baracoa zone usually do not have such nutrition programs nor provide lunch or snacks to the students, so school-age children usually eat lunch at home. More nonexporters have access to the school snacks than do exporters, however, the difference is not statistically significant. Vegetable gardening is not common in the area and gardening projects or small animal husbandry projects are nonexistent. The area lacks private or public institutions that work with women in nutrition-related projects (Table 4-2). The basic diet of producers is described in this chapter. Next chapter will deal more with the differences in food items frequently consumed by exporters and nonexporters. It is worthwhile to note that, in general, the variety of fruits and vegetables

TABLE 4-2. INSTITUTIONAL PROJECTS, PERCENT

DESCRIPTION	ALL n=124	EXPORTER n=41	NONEXPORTER n=83	χ^2
School Snack	4.6	1.7	6.1	0.631
Nutrition	1.9	3.3	1.2	NA
Vegetable Garden	0.6	1.7	0.0	0.238

Note: NA = not available due to small number of cases.

is limited in producers' diet. Foods which are commonly present in the diet of the producers are:

1. Animal products: chicken, beef, pork, eggs, milk, cheese;
2. Starches and grains: potatoes, plantain, macaroni, rice, beans, tortilla (maize), bread (wheat flour); and
3. Fruits and vegetables: onions, cabbage, green peppers, tomatoes, mangoes, oranges, limes.

The producers rely on seasonal products and cannot complement what they buy. Fruits are particularly sensitive to seasonality. Fish is not commonly consumed in the area. A vegetable garden would provide the producer a better complement of food products, however, the lack of government projects in the Baracoa zone reduces the possibility of an improvement in the producers' basic diet. In general, institutional resources, such as projects for women and children, are not available in the Baracoa zone. Probably because of the area in which the children attend classes, some nonexporters' children have greater access to school snacks than exporters' children. Then, exporters have greater access to nutrition projects and vegetable gardens than do nonexporters, but this difference in access cannot be emphasized because it is not statistically significant.

Both husband and wife buy the food for their homes. There are several ways by which producers in the area buy

food and basic necessities. The area has a number of small stores (pulperias) which are the most common outlets; markets and supermarkets are located in nearby towns. Small trucks drive around the area, usually selling vegetables, fruits, and some basic necessities. Individuals on bicycle distribute smaller quantities of products, especially meats, milk, and cheese, which are produced locally. Pulperias are the most commonly used because of transportation problems in the area; they are better supplied than the small trucks which tend to be more limited in their variety of products.

Production and Technological Aspects

Institutional assistance. Technical assistance does not yet reach all farmers and entrepreneurs within the marketing and transportation systems. Two agencies, FPX and INFOP, are now providing assistance to facilitate the marketing process (FHIA, 1985), but it is primarily those farmers in cooperatives, such as COCOPLAINH and CARPHIL, and in agrarian reform groups, who are more likely to receive assistance at this time. Between two-thirds and four-fifths of the producers do not receive any technical assistance from agents (Table 4-3). The representatives who visit the exporters and the nonexporters come from different agencies. The percent of producers visited is similar, that is, between 21.7% and 26.8% for the exporters and between 21.7% and 30.1% for the nonexporters. Although a slight tendency can be observed for agents to visit the nonexporters more

TABLE 4-3. INSTITUTIONAL REPRESENTATIVES, PERCENT

DESCRIPTION	ALL n=124	EXPORTER n=41	NONEXPORTER n=83	χ^2
Visits by Representatives				
Extension agent	16.2	5.1	21.7	0.019
Other agents	12.8	21.7	8.4	0.038
Total	29.0	26.8	30.1	
Visits to Representatives	19.3	14.3	21.7	0.336

often than the exporters (i.e., visits are 3.3% more often to nonexporters; $\chi^2<.04$). The agents who visit more often are those from the National Bank of Agricultural Development (BANADESA), Secretary of Natural Resources (SRN), and INFOP. Most visits are on a monthly basis. Around 19% of the producers visit the extension agencies at least once a year. The difference between exporters' number of visits to representatives and those visits from nonexporters is not statistically significant. The agents do not help producers obtain chemicals or equipment for production. In this zone, both exporters and nonexporters lack access to the facilitating role of public institutions to help them obtain chemicals and some equipment. The greatest difference shown is that public institutions help more nonexporters (6%; $\chi^2=.011$) than exporters (1.7%) obtain sprayers for the control of Black Sigatoka.

Generally, producers do not use agricultural loans; instead, it is more usual for a grower to obtain funds for the current production cycle through the sale of previous harvests. Some loans, however, are obtained from BANADESA through the efforts of the cooperatives. Other funding sources include family labor, savings, and the sale of other products.

Ownership of land, equipment, and facilities. Farms consist of one to seven distinct plantain areas. Around 50% of the producers have a farm consisting of a single plantain

area and about 29% have two plantain areas. A higher percentage of the exporters have a single area than do the nonexporters. It is most common in the plantain area not to build a fence around the land. Lacking fences, owners rely upon memory to distinguish their parcels or upon a specific physical landmark, such as a creek or a drainage canal.

The most common way of obtaining land was by direct purchase. Buying land is not easy at present; most of the producers have been in the area for more than ten years and have never sold land. Those who have sold land do so because it was a low-yielding parcel or because they needed the money. Land may also be obtained via inheritance or gift, through an organization (such as a cooperative or INA), or by renting from other producers. At least 65% of the producers lack documentation for their land, although more exporters (23.7%) have "private" or "right-of-use" documents than do nonexporters (11%); the difference is statistically significant at the 0.10 level. Many producers are currently attempting to resolve uncertainties regarding their land title.

More than half of the producers have a flooding problem on their land. All the land for 12.5% of the producers floods and for more than 50% half of the land is affected. The area has drainage canals built by the TRRCo before 1975 to control floods on their banana production. The canals are still there but some have become useless due to lack of

adequate maintenance. Most of the producers own land where drainage canals exist, but there are important differences between exporters and nonexporters. The two groups can be classified in terms of the degree of drainage problems. Among exporters, 74.5% experience "slight" problems with water drainage; 21.8% report "moderate" problems; and 3.6% experience "serious" difficulties. This pattern is significantly different (χ^2=.001) from what can be observed among nonexporters. The distribution of responses among the latter is as follows: slight, 29.5%; moderate, 21.8%; and serious, 48.7%. Hence, in terms of water management, is clear that exporters have a considerable advantage over the other group.

Equipment and facilities are generally limited for the plantain producers (Table 4-4). Most of the producers (97.5%) do not own or use water pumps even though these are needed in the area to remove excess standing water and to control flooding. Uncontrolled water takes its toll in the plantain fields during the rainy season. Most of the producers have tubs to wash their plantain, whether they use them or not. Plantain sold to the truckers (camioneros) for the local/regional market does not need to be washed. There are different kinds of tubs: aluminum, wood, and plastic. Storage for chemicals is usually inadequate. A room in the house is often used. It is more common for exporters to have a special warehouse for chemicals (28.3%) than for

TABLE 4-4. OWNERSHIP OF EQUIPMENT AND FACILITIES, PERCENT

DESCRIPTION	ALL n=124	EXPORTER n=41	NONEXPORTER n=83	χ^2
Equipment				
Tractor	0.8	0.0	1.2	0.478
Large truck	1.4	1.7	1.2	0.390
Small truck	10.6	15.0	8.4	0.434
Water pump	2.5	5.1	1.2	0.855
Wash tubs	83.9	83.1	84.3	0.234
Motorized sprayer	11.7	8.4	13.2	0.720
Manual sprayer	88.2	88.3	87.9	0.032
Facilities				
Water resource	86.1	89.7	84.3	0.425
Fences around land	13.3	13.3	13.2	0.728
Chemical warehouse	15.1	28.3	8.4	0.003
Shaded packing area	14.0	30.0	6.0	0.001

nonexporters (8.4%) (the difference is statistically significant, χ^2=.003). Around 14% of the producers have a dry and covered packing area. Most of the exporters pack in the shade just outside the cultivated area, however, about one-third (χ^2=.003) of them do have a shaded area. A few of the nonexporters have a dry and covered packing area, which is often used for other purposes. Although both exporters and nonexporters need a shaded area for packing or to protect the plantain piled for the truckers to pick-up, there is a statistically significant difference (χ^2=.001) between the percent of exporters and nonexporters who own this kind of facility. Less than 1% of the plantain producers do own tractors or large trucks. A few own small trucks and motorized sprayers. More exporters than nonexporters own small trucks and fewer own motorized sprayers, however, the differences are not statistically significant. Most producers have access to manual sprayers. The most common places where the producers buy their sprayers are the main cities near the plantain area; some rent or borrow sprayers at the cooperatives.

Production system. Most plantain growers (75.3%) produce at least one crop other than plantain (Table 4-5). Maize is the most common (62.2%), followed by rice, beans, and cacao. Producers who own land where cacao can grow are interested in increasing the production of cacao because of

TABLE 4-5. PRODUCTION OF NONPLANTAIN CROPS, PERCENT

DESCRIPTION	ALL n=124	EXPORTER n=41	NONEXPORTER n=83	χ^2
Maize	62.2	55.0	65.9	0.240
Beans	9.8	10.0	9.8	NA
Rice	17.6	1.7	25.6	0.001
Cacao	7.7	13.3	4.9	NA
At Least One Other Crop	75.3	71.7	77.1	0.507

Note: NA = not available due to small number of cases.

its high economic returns and lower risks compared to other crops in the area.

Around 65% of the producers or their wives use the house yard to raise domesticated animals (Table 4-6). Two thirds of the producers own chickens, about one-fourth produce pigs and/or dairy cows, and less than six percent produce beef cattle. Approximately one-third of the producers own horses, which constitute an important means of transportation of plantain in the area. In general, other than chickens, livestock ownership by producers is limited. Some differences do exist, more exporters own cattle while more nonexporters own horses, however, the differences are not statistically significant.

The most common reasons for producers not to sell for export are low farm technology, weather problems, and poor management in the cooperative. Although not a necessary condition, producing and selling for export seems to be related to participation in a cooperative. The cooperatives search for export possibilities, middlemen, and international intermediaries, and facilitate access to technology and credit. The common technological and cultural practices for plantain production are:

1. replanting (resiembra);
2. pruning (deshoje);
3. suckering (deshije);

TABLE 4-6. PRODUCTION AND OWNERSHIP OF LIVESTOCK, PERCENT

	ALL			EXPORTER			NONEXPORTER			
DESCRIPTION	TOTAL n=124	WIVES	OTHERS	TOTAL n=41	WIVES	OTHERS	TOTAL n=83	WIVES	OTHERS	χ^2
Chickens	67.6	65.3	2.3	67.8	63.3	4.5	67.5	66.3	1.2	0.687
Quantity	11.15			10.56			11.45			
Pigs	28.9	18.3	10.6	28.8	18.6	10.2	28.9	18.1	10.8	0.827
Quantity	0.90			1.27			0.72			
Dairy Cattle	27.8	4.4	23.4	30.5	3.4	27.1	26.5	4.8	21.7	0.863
Quantity	2.79			3.41			2.48			
Beef Cattle	5.8	0.6	5.2	10.2	1.7	8.5	3.6	0.0	3.6	0.262
Quantity	0.70			1.14			0.48			
Horses	35.1	3.8	31.3	30.5	6.8	23.7	37.3	2.4	34.9	0.454
Quantity	0.73			0.71			0.73			
Special Area	35.0			29.3			37.8			0.510

Note: Quantity is an average and not a percent.

4. weed control, in a combination of mechanical methods (using a machete) and chemical methods (using herbicides);
5. fertilizing; and
6. control of diseases and fungi, especially Black Sigatoka.

Replanting is not required often, but almost all producers have to do it. Plantain, once planted, procreates itself and can last for several years. Replanting is usually done every one to two years. The majority of the producers do not have paid laborers to do the replanting; those who do pay one laborer to do the activity. Many producers have one additional family member as an unpaid laborer, during the replanting activity.

Pruning is necessary to keep the plantain plant clear of diseases and fungi. It is done on a weekly, biweekly, or monthly basis; the most common is biweekly. Suckering is a very specialized task usually done at least once every six months, and is performed by just a few individuals in the area. Suckering consists of cutting down both weak (hijos de agua) and vigorous shoots (hijos de espada) to allow the strongest shoot (hijo de producción) to grow. This task requires considerable skill. The decision of which shoot should be allowed to grow is a long-term decision that considers the amount of light the plants will receive and other factors.

Weed control can be done using mechanical methods, chemical methods, or a combination of the two. Many of the nonexporters (57.8%) and most of the exporters (86.7%; χ^2=.024) apply herbicides for weed control at least once every six months. About one third of the nonexporters do weed control once every six months to a year. Herbicides are usually purchased through the cooperatives; COCOPLAINH and CARPHIL sell herbicides to 63.3% of the exporters and to 61.4% of the nonexporters. However, COCOPLAINH serves 60% of the exporters and 24.1% of the nonexporters while CARPHIL serves 37.3% of the nonexporters and 3.3% of the exporters.

About 19% of the growers do not use fertilizer. For those who do, fertilizer is applied at intervals of three months to two years, with the most common application intervals being six months to a year. More nonexporters (45.8%; χ^2=.085) than exporters (28.3%) apply in that six months to a year interval. Exporters are more evenly distributed (about 25%) between the different intervals of application. The cooperatives are the key sources of fertilizer, supplying around 57% of the producers.

Although most producers have Black Sigatoka in their fields, around 39% overall do not apply fungicides. About 59% of the nonexporters and seven percent of the exporters do not use fungicides; the differences are statistically significant (χ^2=.001). Control of Black Sigatoka is one of the main differences in terms of the technology used by the

producers who sell for export and those who do not. The nonexporters who control for Black Sigatoka do so at intervals of 16 days or less, usually using manual or motorized sprayers. The intermediary provides aerial spraying services for the export growers from whom he buys, and later deducts Lp. 1.00 per box from the Lps. 7.00 he pays per box for export.[4] These growers, alone or in groups, provide a laborer on the ground to signal with flags to the pilot. The nonexporters are not generally part of such a system, unless they happen to be located within an area where exporters are using aerial spraying. Producers are generally ignorant of the details of how the system works and their role in the system.

Finally, other problems which the producer must face are the drying of the roots, insects such as picudo, and fungi such as puro and moko. These problems affect the quality of plantain, especially for export, but are minor in importance when compared to Black Sigatoka, and are not usually under systematic control.

Harvest, transportation, and storage. The fruit is usually harvested every eight days or every 21 days, depending upon the farmer and size of farm. During certain months of the year the yield is lower, but plantain produces during the entire year. Large-scale producers harvest all

[4] The price quoted during January 1991 was Lps. 15.00 per box, paid by the intermediaries in the export market.

year long while small-scale producers tend to harvest sporadically. Plantain harvest and packing are family activities, especially for the exporters because many family members can also help during packing. Harvesting is done by an individual called the "cutter" (cortero) who has to determine the age of the fruit before cutting it. The fruit on the stem (racimo) is (1) carried (acarreo) by one or two men to the outskirts of the plantation; (2) separated into hands or single fruits (desmanado or desdedado); and (3) classified as first (primera), second (segunda), and third (pirracha) quality. First quality, or export, fruit is washed with chemicals and packed into boxes provided by the intermediary and sent in a small truck to the refrigerated container. The second quality fruit is cut into hands or manos and loaded onto the middlemen's truck at the farms or at a nearby location to the farm. Nonexporters sell both first and second quality to the truckers. The third quality fruit is commonly given to boys so that they can sell it and thereby obtain income. Some producers trade the third quality fruit for transportation of the export fruit to the container, or sell the product at a low price.

Due to a lack of storage facilities in the Baracoa zone, producers must sell the plantain immediately after it is cut. The plantain fruit is delivered within a day after harvest, especially if it is packed for export, since it must be placed quickly in a refrigerated container to

prevent additional ripening. The intermediaries control the refrigerated containers for transportation and storage, and thereby control the producer by assigning quotas.

Transportation to the container is provided by several individuals in the area who own small trucks. These truck owners make appointments with the producers to arrive on a specific day and at an approximate time at the farms. Nonexporters do not have to pack; they use horses, horse-drawn wagons, or bicycles to carry their harvest directly to the truck which is stationed near a main road or in the nearby village. When the truck has not arrived, the second quality fruit is left in piles until it is delivered. One fourth of the nonexporters deliver the fruit within two days. Fruit is usually delivered as soon as harvested.

Plantain is exported weekly by the intermediary. It is sold by the producers according to an established quota system, when they have adequate fruit quality. Large-scale producers can sell weekly and biweekly, but the quantity of production is higher during the period from March to September and lower from October to February. Small-scale producers usually sell biweekly and every 22 days because they do not have enough quantity of high quality plantain.

Income and Income Sources

The plantain growers in Baracoa are predominantly small-scale, with most producers having farms in the 1 to 5 hectare (ha) range (Table 4-7). More exporters than

TABLE 4-7. FARM SIZES IN BARACOA, PERCENT

FARM SIZE (HA)	ALL n=124	EXPORTER n=41	NONEXPORTER n=83
From 0.41 to 1.00	17.0	15.0	18.1
From 1.01 to 5.00	62.2	51.7	67.5
From 5.01 to 10.00	15.6	25.0	10.8
From 10.01 to 24.00	5.2	8.3	3.6

Note: Sizes are based upon area planted with plantain; the probability of $\chi^2 = 0.111$.

nonexporters have farms between 5 and 24 ha (33.3% and 14.4%, respectively; χ^2=.111). The average area planted in plantain is 3.35 ha per farm and the size of the average farm is 4.69 ha. For comparison, the average producer in the Sula Valley has 3.8 ha (Murray et al., 1977). Most plantain farmers have low income (FHIA, 1986). The producers in Baracoa had a net revenue per ha of Lps. 1,067.44 (Table 4-8).

Farmers receive a higher price for their product when they sell to the export market than when they sell to the local/regional markets. This of course is related to the quantity and quality of the fruit produced. The price for one thousand plantain dedos (fingers) ranged from US$15 to US$27.50 in the Honduran and Central American markets, while plantain for export to the U.S. was worth US$45 per thousand dedos (FHIA, 1986).[5] Therefore, between US$17.50 and US$30 more was paid per thousand dedos for the U.S. market. These price differences lead to an important question: even when plantain for export seemed to result in a higher income for plantain growers, why were all of these growers not producing for export?

Small-scale producers as a group can supply the minimum required quantity of exportable plantain, whereas an

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[5] Prices are in U.S. dollars, expressed in the exchange rate of Lps. 2.00 for US$ 1.00. Lempira (Lp.) is the national currency for Honduras.

TABLE 4-8. FARM REVENUES FROM PLANTAIN SALES

DESCRIPTION	ALL	EXPORTER	NONEXPORTER	t
Average Size of Farm, ha				
Total	4.69	8.07	3.00	
With plantain	3.35	4.66	2.70	
Yield/ha				
First quality, boxes	331	331	0	0.019
Second quality, dedos	19,745	16,010	21,622	0.030
Third quality, dedos	6,673	8,922	5,543	0.065
Revenues, Lps.				
Gross revenues	7,370.55	14,262.33	3,932.96	0.001
Gross revenues/ha	2,200.16	3,060.59	1,456.65	0.001
Net revenues	3,575.92	7,454.65	1,616.18	0.001
Net revenues/ha	1,067.44	1,599.71	598.59	0.014

individual plantain grower generally cannot. Adequate marketing channels and control of Black Sigatoka make export possible. The COCOPLAINH and CARPHIL cooperatives are therefore vital in that they permit middlemen and international intermediaries to deal with a single representative rather than with hundreds of small-scale growers.

Plantain is important to these producers; 41.5% of the nonexporters and 68.3% of the exporters rely primarily upon plantain, and lack other major sources of income. Other income sources include various crops, animals, off-farm income, and small stores. Although most of the producers and their wives do not have off-farm income, those who do find that they spend their additional income to buy more food and school supplies for their children.

The plantain growers produced an average of 26,824 dedos of first and second quality plantain[6] and 6,673 dedos of third quality per ha per year (Table 4-8). From the former, exporters obtained 331 boxes of first (export) quality plantain and 16,010 dedos of second quality fruit. For the nonexporters, second quality plantain is higher than for the exporters (χ^2<.030) because it also includes some

[6] A box of plantain can contain between 55 and 70 dedos, according to the size of the individual dedo. The conversion factor used in this study is 60 dedos per box.

first quality fruit. Their gross revenue per ha was Lps. 3,060.59 while that of the nonexporters was Lps. 1,456.65.

Exporters have a higher cost of production because of the intense use of chemicals to control Black Sigatoka. As a result, their net revenue per ha was Lps. 1,599.71 and that of the nonexporters was Lps. 598.59. Because exporters have more land than do nonexporters, their net revenue per farm per year was Lps. 7,454.65 while the nonexporters earned Lps. 1,616.18 per farm per year. Thus, the exporters obtained a net revenue per ha 2.67 times greater than that of the nonexporters. Exporters had 4.61 times greater net total revenue per year than did the nonexporters.

Plantain growers supplement their income by producing other crops and livestock (Table 4-9). The main crop other than plantain is maize, much of which is for home consumption. Rice is the most important cash crop other than plantain that nonexporters grow; it provides 25.6% of them with additional income. Cacao has only recently been seriously considered by plantain producers as an alternative cash crop, and perhaps even as a substitute for plantain. Chickens are the most prevalent livestock encountered and are generally owned by the women. Due to the low market value per bird, chickens are not viewed to be a major source of income. Dairy and beef cattle, as well as pigs, are not commonly owned; producers are willing to sell their beef animals but are reluctant to sell their dairy cattle.

TABLE 4-9. GROSS REVENUES FROM NONPLANTAIN CROPS AND LIVESTOCK

DESCRIPTION	ALL	EXPORTER	NONEXPORTER	t
Nonplantain Crops				
Maize				
Quantity, cwt	22.8	25.8	21.5	0.613
Gross revenue, Lps.	357.96	405.53	337.02	
Beans				
Quantity, cwt	0.3	0.0	0.4	NA
Gross revenue, Lps.	27.09	0.00	1.47	
Rice				
Quantity, cwt	9.5	0.5	14.0	0.001
Gross revenue, Lps.	304.16	16.01	447.90	
Cacao				
Quantity, lbs.	31.4	51.2	21.7	0.385
Gross revenue, Lps.	104.84	170.96	72.43	
Livestock				
Chickens				
Quantity, animals	11.15	10.56	11.45	0.742
Gross revenue, Lps.	66.92	63.36	68.67	
Pigs				
Quantity, animals	0.90	1.27	0.72	0.428
Gross revenue, Lps.	118.90	167.33	95.16	
Dairy cattle				
Quantity, animals	2.79	3.41	2.48	0.596
Gross revenue, Lps.	1,551.05	1,896.46	1,381.60	
Beef cattle				
Quantity, animals	0.70	1.14	0.48	0.419
Gross revenue, Lps.	388.00	632.15	268.26	

Note: These quantities are based on total production.
NA = not available due to small number of cases.

Clearly, the three aspects studied--standard of living, ownership of land and capital, and access to institutional resources show that exporters are better-off than nonexporters in terms of food, housing, and education. A tendency exists for exporters to have greater access to health-care than nonexporters. However, the differences are not statistically significant.

The variables considered for the ownership and use of capital and land involve (1) other agricultural production, (2) animal husbandry, and (3) ownership of equipment and facilities. The comparison of producers in this Chapter shows that exporters and nonexporters in the zone differ in terms of production: exporters have larger quantities of better quality plantain. The technology used by exporters includes better chemical control of Black Sigatoka than that used by nonexporters. The exporters obtain a higher income than do nonexporters. Differences between producers also exist in the ownership of certain facilities such as warehouses and shaded packing areas. However, no statistical differences were found in terms of ownership of equipment. Plantain producers generally do not own large animals (such as beef cattle) or equipment (such as water pumps). Two of the most important differences found are the larger farm size and quantity of plantain planted and the better quality of land owned by exporters than owned by nonexporters.

The variables considered for producers' access to institutional resources include (1) existence of projects in the area, (2) institutional involvement in facilitating access to credit and production inputs, and (3) presence of institutional representatives. Producers' access to institutional resources is characterized by an important role of the cooperatives and a negligible role of government agencies. Cooperatives give exporters and nonexporters greater access to technology such as fertilizer, fungicide, herbicide, and sprayers. For all but fungicide, which the intermediary provides, the exporters obtain greater advantage of the facilitating role of the cooperatives than do nonexporters. Nonexporters, rather than exporters, show a slight tendency to receive greater technical assistance from extension agents. Other than the assistance from institutional representatives, producers do not have access to institutional projects, children do not usually receive snacks at school, women do not have nutrition projects, and men do not usually receive agricultural loans.

Differences exists between exporters and nonexporters in terms of ownership of a small number of facilities and access to technical assistance from institutions. However, neither the exporters or the nonexporters own and use large quantities of land and capital. It is important to recall that very few producers (whether exporters or not) own equipment and facilities or have much access to

institutional resources. The significant differences between exporters and nonexporters that do exist in terms of several indicators (for example, with respect to land, technology, production, and income) are consequential in view of the overall low standard of living of the producers in the area. The chapter that follows explores these topics in greater detail.

CHAPTER 5
SOCIAL AND ECONOMIC CONSEQUENCES OF EXPORT PRODUCTION

Introduction

The purpose of this chapter is to address the following question: Do those plantain growers who produce for the international market enjoy a higher standard of living compared to those farmers who produce only for domestic consumption? An answer to this question is important inasmuch as plantain is one example of a NTE commodity. As we have seen in previous chapters, there is considerable debate regarding the consequences of NTE development strategies. Policy makers who promote NTEs point to the advantages that are presumed to accrue from the international marketing of exotic products for which certain developing countries have a comparative advantage. It is important to note that, for the most part, there are few studies that test this hypothesis.

The analysis that follows investigates one aspect of the debate concerning NTEs. Here the focus is specifically on producers, rather than on the potential macroeconomic consequences that may be associated with agricultural exports (for example, the social consequences of the public use of foreign exchange revenues). Hence, the objective is to exploit the survey data collected in Honduras by focusing

on several key indicators of the standard of living. The analysis will proceed in two steps. The first task is to describe exporters and nonexporters in terms of the key indicators. The second step is to combine the indicators into composite indices amenable to regression analysis.

Measuring Standard of Living

Quality of life is a particularly difficult concept to measure in rural areas of developing countries. In such places, a standard indicator, such as monthly income, is very difficult to ascertain. Moreover, in contrast to urban places, money itself has an unspecified meaning in the countryside. Because of the considerable amount of nonmonetized production that takes place in the home, the amount of cash income alone does not adequately reflect the household's living standard.

A partial solution to this problem is to focus on other indicators. One such measure is the diet that people consume. Another is the quality of the house that the farmer lives in. Imperfect as these indicators may be, they nonetheless permit a preliminary analysis of the social consequences of NTEs.

Food Consumption

Description

The diet that people consume in the Baracoa region of Honduras is quite similar to the foods eaten in other rural areas. The master list of 41 food items in Table 5-1

TABLE 5-1. LIST OF COMMON FOODS, PERCENT

DESCRIPTION	ALL n=124	EXPORTER n=41	NONEXPORTER n=83	χ_2
Beans	98.6	98.3	98.8	0.846
Chicken	64.3	73.3	59.8	0.137
Beef	65.0	85.0	54.9	0.001
Pork	47.1	53.3	43.9	0.607
Eggs	94.9	96.7	94.0	0.279
Milk	78.8	75.0	80.7	0.575
Cheese	72.5	85.0	66.3	0.010
Potatoes	82.8	91.7	78.3	0.145
Plantain	91.5	86.7	94.0	0.378
Macaroni	78.3	78.3	78.3	0.890
Rice	99.2	100.0	98.8	0.478
Tortilla (Maize)	99.2	100.0	98.8	0.478
Bread (Wheat Flour)	69.8	52.5	78.3	0.011
Onions	90.5	93.3	89.2	0.027
Cabbage	87.0	90.0	85.5	0.320
Green Peppers	49.2	58.3	44.6	0.135
Tomatoes	91.4	98.3	88.0	0.145
Mangoes	50.3	64.4	43.4	0.005
Oranges	79.7	85.0	77.1	0.528
Limes	47.3	60.0	41.0	0.123

Note: χ^2 denotes the probability of χ^2.

is a list of those foods more commonly present in the weekly diet of the producers. At lower levels of income, the dietary components are basic foods such as beans, tortillas, rice, and eggs. Plantain, of course, is consumed frequently by a large percentage of the producers. The most common vegetables are onions, tomatoes, and cabbage. Two products consumed with almost the same frequency between producer groups on a weekly basis are macaroni (78%) and beans (98%). Milk, plantain, and bread are consumed more frequently by nonexporters than by exporters. However, bread is the only item that showed a statistically significant difference between the two groups (χ^2=.011). All other food items are consumed more frequently by the exporters. In terms of meat products, exporters indicated that they consume noticeably more chicken (73.3% vs. 59.8%) and beef (85.0% vs. 54.9%; χ^2=.001) than did nonexporters.

It is not surprising to find that foods not produced in the area would not be accessible to farmers. It is also uncommon to find that rural Hondurans are willing to try products other than those to which they are accustomed, i.e., beans and tortillas. The area lacks nutrition projects that might permit producers to complement their basic diet with new food products that they learn to grow and cook for their own domestic use. A farmer must visit large city markets to buy foods such as vegetables and fruits; however, small-scale farmers in the area do not own

cars and do not find easy means of transportation to the cities. These farmers depend on vendors who travel around the area in small pick-up trucks selling seasonal fruits and vegetables. Also, the plantain producers do not own refrigerators and cannot easily store perishable products.

Regression

In order to use the 41 dietary components discussed above as measures of the standard of living, it is first necessary to build a FOOD index that can be employed as a dependent variable in regression analysis. Some of these food items may be deleted because they do not show enough variability: e.g., almost everyone eats tortilla and beans while almost no one eats broccoli. In such cases, the variability is minimal and the item does not demonstrate differences between exporters and nonexporters.

The remaining 27 food items were subjected to factor analysis to further reduce the number of items to use in an index. Factor analysis finds "interrelationships among variables in such a way that the variables can be described adequately and conveniently by a group of basic categories smaller in number than the original variables" (Zeller and Carmines, 1980, 19). Factor analysis consists of a variety of statistical techniques that facilitate the processing of data through four basic steps: (1) a covariance matrix, (2) extraction of initial factor, (3) rotation to a final set of factors, and (4) construction of factor scales (Kim and

Mueller, 1978). Given the large number of potential indicators, one purpose of factor analysis is to select a smaller subset of variables. This is done on the assumption that it is more efficient to use a smaller number of valid indicators than a larger number of weaker measures. All 27 items are not simply added to produce a single measure, since it is assumed that all items are not equally valid measures of diet. Instead, those items which show variability are classified according to the strength of the loadings in a standard of living factor and added into the FOOD index.

A principal components factor analysis with varimax rotation was used on the 27 items. Eight factors resulted with eigenvalues higher than 1.0. Factor 1 explains more of the variance in the food items (eigenvalue=6.06253). Of the 27 items, eight with factor loadings higher than .30 on factor 1 were selected. A second factor analysis was applied to these eight items for inclusion in the index. The factor loadings for the second factor analysis are reported in Table 5-2. The index is built by multiplying the factor loadings with the standardized scores[1] of the item and adding the numbers to the other items.

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[1] Standardized scores are used to create the index because different variables are summed into a single measure. The standardized score or z-score is obtained by subtracting the mean value of the item (or variable) from its value and dividing the difference by the standard deviation.

TABLE 5-2. FACTOR LOADINGS FOR FOOD INDEX

INDEX AND VARIABLES	FACTOR LOADING
FOOD Index	
Cucumbers	0.71452
Radishes	0.73150
Mangoes	0.11845
Pineapple	0.82504
Watermelon	0.84049
Melon	0.81537
Guanabana	0.53014
Other breads	0.00227

Table 5-3 lists the selected eight dietary components, which include vegetables, fruits, and starches. These food items may be construed to be a shift away from basic necessities and leaning toward the consumption of luxuries. The percentage of exporters who consume these items at least once a week is generally higher than that for nonexporters. Of these eight products, only cucumbers are more frequently eaten by nonexporters than by exporters. Consistent with the tendency of the standard of living indicators in Chapter 4, the food items also suggest that exporters are better-off than nonexporters.

Regression analysis is used to explore the factors that contribute to differences in standard of living. More specifically, the goal is to determine whether a higher standard of living can be attributed to exporter status (see Chapter 3), after controlling for the other variables. Exporter status (EXP) is included as a dummy variable to show the importance of producing for export in the life of the producers. Of special interest is the influence of land assets. The size of landholdings is a very important determinant of poverty (de Janvry and Sadoulet, 1989). Quantity and quality of land (see Chapter 4) are therefore used as independent variables. Human capital must be taken into account. Age and education of the head of household are used as independent variables representing the background characteristics of producers. Not only does

TABLE 5-3. INDICATORS FOR FOOD INDEX, PERCENT

DESCRIPTION	ALL n=124	EXPORTER n=41	NONEXPORTER n=83	χ^2
Other Breads	39.0	61.7	27.7	0.001
Pineapple	14.5	26.7	8.4	0.001
Mangoes	50.3	64.4	43.4	0.005
Radishes	13.6	16.7	12.0	0.053
Guanabana	10.7	20.0	6.0	0.059
Melon	11.2	16.7	8.4	0.103
Cucumbers	32.2	26.7	34.9	0.505
Watermelon	20.1	33.3	13.4	0.007
FOOD Index	-0.024	0.308	-0.189	

Note: The FOOD Index is expressed in z-scores.

education open avenues to change and experience, but also its relationship to income has been greatly studied in the literature. Three regression models are analyzed to determine the effect of EXP on the standard of living of plantain producers, with the FOOD index being used as the dependent variable.

Before turning to the regression findings, it is useful to first examine the bivariate correlations for the variables included in the subsequent regression equations that use the FOOD index as the dependent variable (Table 5-4). It is worth noting that the independent variable that shows the highest correlation with the food index is the "quantity of land" held by the producer. It is important to observe that none of the intercorrelations among the independent variables are high. Hence, the issue of multicollinearity is not a problem in the regression equations that follow.

The education of the head of household has a moderate relationship to the dietary patterns of the producers (r=.246). Age has a weaker relationship to the dietary patterns of producers (r=.178). EXP does not have a significant correlation level with the FOOD index. The finding that export status does not have a relationship to one of the components of quality of life suggests that NTEs might be less consequential in the lives of plantain producers than, for example, size of landholding.

TABLE 5-4. BIVARIATE CORRELATIONS AMONG VARIABLES IN FOOD INDEX REGRESSION MODELS

	VARIABLE					
VARIABLE	1	2	3	4	5	6
1. FOOD Index	1.000	0.058	0.246 p≤.01	0.178 p≤.05	0.397 p≤.001	-0.126
2. Export Status		1.000	0.194 p≤.05	-0.029	0.225 p≤.01	0.486 p≤.001
3. Education			1.000	-0.276 p≤.001	0.290 p≤.001	0.112
4. Age				1.00	0.154 p≤.05	-0.142
5. Quantity of Land					1.000	0.106
6. Land Quality						1.000

Note: The analysis is based on n=123.

Regression results for three models using the FOOD index as the dependent variable are shown in Table 5-5. Model 1 includes only the dummy variable EXP. The coefficient is positive (b=.4962), and is not statistically significant. The results of Model 1 serve as a reference point for Models 2 and 3. The objective of Models 2 and 3 is to determine whether the inclusions of additional independent variables affect the results of the first regression.

Model 2 introduces the background characteristics of the head of household. Two variables of particular interest are age (to control for life cycle stage) and education (as a measure of human capital). This model is statistically significant (F=.0013). The adjusted R^2 indicates that the variables in this model account for 10% of the variability in the FOOD index. The background characteristics of the producers explain more of the variability in dietary components than does EXP. The coefficients for education and age of the head of household are statistically significant ($p \leq .001$ and $p \leq .003$, respectively) and positive (b=.3715 and b=.0711, respectively). Model 2 suggests an important effect of the background variables; after age and education are introduced into the equation, the effect of EXP is reduced (b=.0916) and not significant. This also implies that NTEs, in this case plantain, are not as important in determining the quality of life of producers.

TABLE 5-5. REGRESSION MODELS FOR FOOD INDEX

DESCRIPTION	MODEL 1 n=123	MODEL 2 n=123	MODEL 3 n=114
Independent Variables			
Export status	0.4962 (0.0692) p≤.45	0.0916 (0.0128) p≤.88	0.2737 (0.0369) p≤.71
Education		0.3715 (0.3184) p≤.001	0.2624 (0.2099) p≤.05
Age		0.0711 (0.2740) p≤.01	0.0432 (0.1624) p≤.08
Land quantity			0.3558 (0.3216) p≤.001
Land quality			-0.7022 (-0.1785) p≤.07
R^2	0.0048	0.1234	0.2328
Adjusted R^2	-0.0035	0.1013	0.1973
Constant	-0.1885	-4.3291	-2.4250
Significance F	0.4473	0.0013	0.0001

Note: ß coefficients in parentheses.

The difference between the correlation among FOOD index and export status in Tables 5-4 and 5-5 is due to the difference in n (for Table 5-4, n=114 while for Table 5-5, n=123).

Model 3 includes land assets variables and shows an adjusted R^2 of .1973, which represents an increase of 9 percentage points in a significant equation (F=.0001). The model has two important variables, quantity of land ($p \leq .001$) and education ($p \leq .028$). The coefficients for land assets and human capital are b=.3558 and b=.2624, respectively. EXP, as in the previous models, is not significant.

Further insight into the relationships can be gathered from examining the ß coefficients.[2] The ß coefficients associated with each b are given in parentheses. The ß coefficient is a useful measure because it permits a comparative analysis of the relative strength of each of the statistically significant variables in the equation (by virtue of the fact that the coefficient is standardized). In Model 3, the importance of education is reduced when quantity of land is included in the model. The results indicate that the most important predictor of the FOOD Index is land quantity (ß=.3216), followed by education (ß=.2099). It is essential to note that the size of landholding has a moderately positive bivariate correlation with EXP (r=.225 and $p \leq .008$), but the relationship is not as strong between education and EXP where r=.194 and $p \leq .019$ (Table 5-4).

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[2] The standardized regression coefficient, denoted by ß, "represents the change in the mean of Y, in Y standard deviations, for a one standard deviation increase in X_i, controlling for the other independent variables." (Agresti and Finlay, 1986, 339).

Housing Quality

Description

Housing in Honduras varies by region. In this northern Departamento of Cortés, at higher income levels, good quality wooden houses were generally used in the past. Today, higher quality houses are increasingly made of cement or brick. At lower income levels, houses are built of yagua (a kind of bamboo), lower quality wood, or bahareque. As income improves, the temporary materials of these lower income houses are replaced by cement blocks. At higher income levels, houses tend to have electricity, an internal water plumbing system, and a sewage system rather than a latrine. In the rural areas, especially where houses are dispersed, these services are not provided by the public sector. Thus, at lower income levels, families cannot install electrical, plumbing, and sewage systems. Sometimes, even when the public systems exist, families do not have the income to pay for their installation and monthly fee.

The HOUSING indicators in Table 5-6 show that utilities (electricity, water, and sewage) are better for the exporters than for nonexporters. Even though the majority of both groups lack electricity in their homes, almost three times as many exporters have electricity than do nonexporters (χ^2=.014). More exporters have easier access to water on their property, either by using wells or indoor

TABLE 5-6. HOUSING INDICATORS, PERCENT

DESCRIPTION	ALL n=124	EXPORTER n=41	NONEXPORTER n=83	χ^2
Utilities				
Electricity	15.4	26.7	9.8	0.014
Toilet	9.6	16.7	6.1	0.127
Water	66.6	81.7	59.0	0.038
Size of House				
One room	28.5	43.6	21.3	0.012
Several rooms	71.5	56.4	78.8	0.012
Housing Materials				
Temporary	31.9	20.0	37.5	0.057
Permanent	68.1	80.0	62.5	0.057
HOUSING Index	-0.200	0.567	-0.573	

Note: The HOUSING Index is expressed in z-scores and is based on n= 116, 38, and 78, for ALL, EXPORTER, and NONEXPORTER, respectively.

plumbing, than do nonexporters (χ^2=.038). The latter depend on public wells, public spigots, or on nature (river or rain) to obtain their water. The proportion of exporters who have water on their property is 1.4 times higher than for nonexporters. More exporters also have either latrines or toilets (and fewer had none) than do nonexporters. In fact, almost three times as many exporters have toilets than do nonexporters.

Nonexporters tend to have larger houses (78.8%; χ^2=.012) compared to those of exporters (56.4%), although the housing materials are more permanent for the exporters (80.0%; χ^2=.057) than for the nonexporters (62.5%). The difference in house size may be due to the style of home built by exporters. It was observed that they often begin their homes with a basic room of permanent materials, leave the cooking area outside, adjacent to the main house, and plan to add permanent rooms later.

Regression

The housing indicators described above measure another aspect of the standard of living of producers. These involve utilities (electricity, water, and sewage) and housing (size of house and housing materials). Several indicators are deleted because they do not show enough variability; e.g., almost everyone uses zinc (corrugated metal) as roofing material. As previously described for the FOOD index, the remaining variables are subjected to

principal component factor analysis with varimax rotation, which leads to the composite HOUSING index (Table 5-7). Two factors with eigenvalues higher than 1 (1.80782 and 1.11282) result from this analysis.

The indicators for quality of life within the HOUSING index show that the exporters are better off than the nonexporters. As described above for the FOOD index, the HOUSING index is now used as the dependent variable in three regression models in which EXP, land assets, and human capital are the independent variables.

Bivariate correlations for the variables included in the subsequent regression equations that use the HOUSING index as the dependent variable are shown in Table 5-8. The strongest relationship between HOUSING and the other variables is with quality of land (r=.434), followed closely by education (r=.420), and quantity of land (r=.348). The HOUSING index also has a moderate relationship with EXP (r=.257). The relationship between HOUSING and quality of land may be explained in at least two different ways.

First, the best land provides higher production and productivity, which are also related to poverty (de Janvry and Sadoulet, 1989). Producers with higher income are able to buy more permanent housing materials (e.g., cement), and include internal plumbing and sewage systems. Permanent systems are not suitable in a bahareque house which is, itself, temporary.

TABLE 5-7. FACTOR LOADINGS FOR HOUSING INDEX

INDEX AND VARIABLES	FACTOR LOADING
HOUSING Index	
Electricity	0.57467
Water	0.78958
Sewage	0.71036
Housing material	0.55781
House size	-0.05065

TABLE 5-8. BIVARIATE CORRELATIONS AMONG VARIABLES IN HOUSING INDEX REGRESSION MODELS

	VARIABLE					
VARIABLE	1	2	3	4	5	6
1. HOUSING Index	1.000	0.257 p≤.01	0.420 p≤.001	-0.044	0.348 p≤.001	0.434 p≤.001
2. Export Status		1.000	0.178 p≤.05	-0.028	0.239 p≤.01	0.492 p≤.001
3. Education			1.000	-0.282 p≤.01	0.334 p≤.001	0.151
4. Age				1.000	0.148	-0.155
5. Quantity of Land					1.000	0.111
6. Land Quality						1.000

Note: Correlations among independent variables differ slightly from Table 5-4 due to missing cases on the HOUSING index. The analysis is based on n=108.

Second, land quality affects not only field production, but also the area in which the producers make their homes. During the rainy season, it is extremely difficult to reach these places, as the main roads become impassable. Rain water does not drain properly in the area, and creeks and rivers overflow; for periods of one or two weeks or more, local residents can reach their homes only on foot or horseback, or by canoe. Later, even after the waters recede, many roads remain muddy and impassable. The difficulty of building permanent houses in the area, added to the risk of losing everything because of flooding, most likely increases the probability that producers will build their homes of wood or less permanent materials. The size of a house may be limited by the availability of land which is slightly elevated and provide some degree of protection from flooding. The next step is to address the issue of how these variables may be associated with this standard of living index.

Models 1 to 3 regress the HOUSING index against EXP, human capital, and land assets variables, as shown in Table 5-9. Similar to the FOOD index equations, the steps to develop these models are first to include EXP, then the background characteristics of the producer, and finally the land assets.

Model 1 is significant (F=.0008) and includes only EXP, which explains 8.6% of the change in the index. Note that

TABLE 5-9. REGRESSION MODELS FOR HOUSING INDEX

DESCRIPTION	MODEL 1 n=116	MODEL 2 n=116	MODEL 3 n=108
Independent Variables			
Export status	1.1398 (0.3064) p≤.001	0.8698 (0.2338) p≤.01	-0.1452 (-0.0398) p≤.67
Education		0.2568 (0.4108) p≤.001	0.2091 (0.3258) p≤.001
Age		0.0109 (0.0816) p≤.35	0.0102 (0.0788) p≤.36
Land quantity			0.1025 (0.1926) p≤.05
Land quality			0.7537 (0.3952) p≤.001
R^2	0.0939	0.2424	0.3618
Adjusted R^2	0.0859	0.2221	0.3306
Constant	-0.5728	-1.6317	-3.0847
Significance F	0.0008	0.0001	0.0001

Note: ß coefficients in parentheses.

The difference between the correlation among the HOUSING index and export status in Tables 5-8 and 5-9 is due to the difference in n (for Table 5-8, n=116 while for Table 5-9, n=108).

this is more than EXP explains for the FOOD index in Model 1. It has a positive coefficient (b=1.1398) and is statistically significant ($p \leq .001$).

Model 2 includes the background characteristics. The adjusted R^2 shows an increase of 13.6 percentage points in a significant model (F=.0001). As in Model 2 of the FOOD Index, education is a determinant of quality of life (the coefficient is b=.2568 and statistically significant at $p \leq .001$). The background characteristics are as important here as in their explanation of the variability in the FOOD index. Also, this model demonstrates that EXP explains some of the variability in quality of life as measured by the HOUSING index (b=.8698; $p \leq .006$).

In Model 3, land quality is the strongest determinant of the HOUSING index (β=.3952; $p \leq .001$). This model, as does Model 3 of the FOOD Index, shows that land assets and education explain much of the variability in the dependent variable (adjusted R^2=.3306; F=.0001). In this case, land quality, rather than land quantity, has a stronger positive, statistically significant effect on the HOUSING index; however, land quantity is also important (β=.1926; $p \leq .032$). Again, as in Model 3 of the FOOD Index, education is the second most important variable, with a positive coefficient (β=.3258) and statistical significance ($p \leq .001$). After land quality and education are included in the model, EXP declines in importance, in terms of its ability to explain

changes in the index. EXP now has a negative coefficient (ß=-.0398), but is not statistically significant; evidence of its influence on the quality of life of producers is therefore inconclusive.

The relative magnitudes of the effects of the independent variables upon the dependent variables are summarized by the standardized regression coefficients of Models 3 for the FOOD Index and for the HOUSING Index. The results indicate that the most important predictors of standard of living are quantity of land (ß=.3216) and education (ß=.2099) for the FOOD index, and quality of land (ß=.3952), education (ß=.3258), and quantity of land (ß=.1926) for the HOUSING index. EXP is important in Model 2 of the HOUSING Index where the ß coefficient is .2338, second to education (ß=.257).

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Summary

Theories of development and social change have undergone continuous modification, emphasizing key economic sectors at different periods of time. From the 1700s to the 1930s, Ricardo's theory of comparative advantage framed our understanding of the position of countries in the world economy: core nations should specialize in manufacturing, while the periphery should provide raw materials. In contrast to the Ricardian prediction, development did not come to the Latin American nations through this path, largely due to the deterioration in the terms of trade between countries. In response to this trend, the larger Latin American nations adopted an inward-developing strategy where the key sector was manufacturing rather than agriculture. Import substitution was proposed by analysts and policy-makers. But this emphasis was also short lived. During the 1960s and 1970s, when it became apparent that the import substitution model had not lived up to expectations, export promotion became the main development strategy, agriculture again became a key sector.

If the role of agricultural production had been viewed primarily as support for the growth of industry, it now came to be as an important sector in its own right (Adelman and Taylor, 1990; de Janvry and Sadoulet, 1989; IICA, 1987). Concomitantly, and echoing the earlier Ricardian emphasis on comparative advantage, the promotion of nontraditional exports was proposed in low waged developing nations. In keeping with these goals, public policy in Latin American was designed to provide incentives to producers and exporters of nontraditional export commodities.

Nontraditional exports were encouraged to provide foreign exchange. The latter would permit the repayment of debts and pay for the increase in badly-needed imports (both internal and external to the agricultural sector). Nontraditional exports would also reduce poverty by increasing employment and providing income to the rural labor force. The experience in some nations (e.g., Guatemala) showed that producers in cooperatives could establish effective marketing channels for nontraditional exports. In this manner, organized groups of small-scale farmers were provided the opportunity of producing cash crops. By lowering risks and using better production technologies, household incomes rose.

In Honduras plantain is a potentially attractive nontraditional export product because it is mainly a family activity. The harvesting, classifying, and packing of

plantain increases the need for labor on the farms, thus providing employment for the households in the area. Plantain is also considered a desirable nontraditional export crop because of its demand in the international market. The demand for plantain in the international market, specifically in the U.S., has been constantly increasing. Despite the fact that plantain production has suffered several setbacks--specifically, the damage caused by Hurricane Fifi in 1974, and the spread of the fungal disease, Black Sigatoka--the product has the potential to become an important Honduran export.

This case study investigated the consequences of producing plantain for the international market on the social and economic situation of the producers themselves. Three hypotheses were derived from the development literature: (1) due to the higher incomes generated from plantain production for export (as opposed to production for domestic consumption), exporters enjoy a higher standard of living compared to nonexporters; (2) the international sale of plantain allows exporters to increase their capital and land assets; and (3) the growers who produce plantain for export have greater access to institutional resources compared tho those who are not engaged in the international market.

To provide background information and test these hypotheses, data were collected by interviewing seven key

informants involved in different aspects of the industry, as well as 151 plantain producers. On-site visits to farms and secondary data complemented the interviews. A random sample was used to select the producers from a list previously developed by the cooperatives in the area in coordination with FHIA.

Findings

The present study showed that in contrast to the case of Guatemala, the export of plantain in Honduras is not in the hands of the producers, but of middlemen. The strongest of these middlemen had links to a multinational corporation that provided the marketing channels. The public sector did not play a decisive role in the export of plantain whereas the cooperatives did. The cooperatives supported both producers and middlemen in their efforts to increase the quality of plantain. They facilitated the use of higher technology, and improved of the control of Black Sigatoka. The importance of the cooperatives in the area cannot be underestimated. Their role in facilitating access to resources and technology was essential in providing access to the international market. In this study, 75% of the small farmers interviewed were members of either COCOPLAINH or CARPHIL. Both cooperatives have a positive role in the producers' access to resources such as fertilizer, fungicide, herbicide, and sprayers (which are mainly rented). Nonetheless, more producers who sell for export

benefitted from their participation in cooperatives. Although membership did not seem to be requisite to becoming an exporter, the strong ties between the main intermediary in the area and COCOPLAINH, meant that membership in this cooperative gave producers greater access to resources which in turn allowed them to market their product internationally.

The producers who used the higher technology, and those who were able to export plantain, obtained better quality and greater quantities of product. The technology used by the producers who export included, not only more frequent weed control, but also, and of great importance in the area, a better control of Black Sigatoka. They also produced greater quantities of plantain, from which they obtained higher net revenues per ha. Revenues for exporters was 2.67 times higher than for those farmers who did not export. Higher income meant a higher standard of living among exporter farmers. Quality of life was measured by variables such as frequency of different foods in their diet, and by housing conditions (services such as electricity, water and sewage, and quality of the construction material). In terms of both measures, producers who exported appeared to be better off, than producers who did not export. Similarly, producers who exported achieved a higher education level than those who did not. Finally, the data showed a tendency (although not statistically significant) for producers who

exported to visit a doctor more often, even though the average number of sick persons during a year was lower for them than for those producers who did not export.

Differences in the standard of living of producers are not solely due to the export of plantain. Evidence suggests that producers who export also have larger farms and have better quality land compared to those farmers who do not sell on the international market. Producers who export have land with slight drainage problems while those who do not export have land with serious drainage problems.

Even though few producers achieved high levels of ownership of capital and land, producers who exported had more productive assets. A key factor in this regard was land tenure. Producers have yet to solve the land title problem, and therefore could not use their land as collateral for loans. However, producers who exported had a greater tendency than those who did not, to have "private" or "right-of-use" documents, which facilitated their access to bank credits. Similarly, producers who exported owned more facilities such as warehouses for chemicals and shaded packing areas.

Honduras has been exporting plantain for several years. The revenues that the country receives are divided between middlemen, producers, and government. The public sector has programs and representatives responsible for helping the plantain producers, yet the presence of such public

officials in the area continues to be minimal. The frequency of visits from government representatives is similar for both groups. The government does not provide nutritional supplements in schools nor does it support animal-husbandry projects, or provide credit for production, or technology improvement. Although the plantain growers contribute their share to national export income, the state does not return much of the foreign exchange to that subsector. In effect, national policies, programs, and projects have not adequately addressed the needs of the plantain growers.

The survey data were used to analyze the relationship between export status and the various quality of life indicators. A bivariate correlation demonstrated that the variables were correlated but, that the strength of these correlations did not show multicollinearity. The measures were then included in regression models that used two dependent variables that served as proxies for quality of life (FOOD index and HOUSING index). Controls were introduced for other factors, such as the background characteristics of the farmer, and the quality and quantity of his land assets. The first model included only the dummy variable, export status. The second model added age and education to the regression analysis. Finally, the third model added measures of the quantity and quality of land. The results of the regression analyses showed that, in the

full model, education and the land assets were the best predictors of the two indicators of living standards, rather than export status.

A problem encountered in interpreting these findings was the difficulty in establishing the direction of causality between the various indicators. The problem is especially salient in light of the fact that the data are cross-sectional rather than longitudinal. This limitation makes it difficult to establish definitely whether it was the farmers' status as an exporter that led to having more and better quality of land, or whether the reverse causality is true. The same question remains for the standard of living indicators. The problem of appropriate time order as a property of causality cannot be fully resolved on the basis of the data presented in this dissertation. Suffice it to say that--in terms of the indicators in this case study: standard of living, ownership of land and capital, and institutional resources--the producers who sell for export are better of than the producers who do not sell for export.

It is nonetheless important to place the above conclusions into the context of a broader discussion of poverty in rural Honduras. Specifically, one must not forget that virtually all of the farmers in the study site are quite poor, by any standard measure. The findings reported here clearly indicate that producers engaged in

nontraditional exports are indeed better off in terms of a variety of indicators. Hence, we should not discount the importance of agricultural exports in improving the standard of living of small-scale farmers. At the same time, for such nontraditional exports to have a significant effect on reducing poverty requires that the system of production and marketing be improved. The following recommendations are offered.

Recommendations

In a country such as Honduras, where most of the population lives in the rural area, the key sector for development must necessarily be the agricultural sector. Plantain, as a nontraditional export, provides foreign exchange to the nation and generates income for the producers. National policies should include an effort from the government to yield a trickle-down effect so that the chosen development strategies will improve the standard of living of the plantain producers in Baracoa, their access to scale-neutral technology that is accessible to small-scale farmers, and strengthening of the cooperatives' efforts in their role of facilitating access to resources.

There are several ways in which the government, by itself or through private initiatives, the cooperatives, and producers themselves can improve the social and economic impacts of plantain production and export in the area. In terms of the government, the first and main course of action

is to strengthen the cooperatives, which have played the most influential role of all the institutions in the area. This could be partially achieved by providing members with required training. Record keeping and accounting capabilities are examples of skills that would enhance the functioning of cooperatives.

Second, the government can provide or facilitate access to the kind of infrastructure that producers cannot provide for themselves. This would include water management (flood control and irrigation systems), improvement of primary and secondary roads, the transportation system (with a focus on bus and rail transport), telecommunications, and electrical power networks.

Third, the government can contribute to the improvement of productivity by facilitating the intensive use of small plots of land that are most often available to the grower. An increase in income from plantain production could be brought about by improved technical assistance through the cooperative system, or via private non-profit organizations. This solution would very likely entail improved farming systems, so as to permit diversification, and the use of appropriate technology. Such policies would make it more likely that small-scale farmers would benefit from rises in agricultural production.

Fourth, the government can expedite the solution of the land tenure problem. Clear title to land is essential in

order to facilitate access to financial institutions. The speed and efficiency of the bureaucracies involved in the documentation process could be greatly improved. Officials within the public and private financial institutions must receive adequate training in order to better serve the needs of their clients.

A fifth option open to the government is to facilitate the creation of backward and forward linkages within the plantain subsector. This does not require direct involvement of the public sector; rather, the emphasis is on the indirect role the state could play in providing legislation, codes, administrative laws, and other incentives to private concerns. Producers, through their cooperatives, could thereby (1) achieve greater control over the marketing channels for inputs and exports and (2) initiate agribusinesses to add value to plantain by processing the fruit and take advantage of the increasing demand for processed plantain. The result would be higher levels of income, increased employment, and improvements in the living conditions of the producers in Baracoa.

Finally, national policy should provide for mechanisms to verify that those public institutions that have been given the responsibility of providing assistance to the producers are in fact fulfilling their obligations. For the sake of greater accountability these responsibilities should be privatized where possible.

Cooperatives for their part, should evaluate their internal difficulties to find ways of improving the way in which producers in the area perceive their actions. Efforts should then be made to overcome the obstacles that hinder producers from becoming members. Cooperatives should also seek resources to improve the social conditions of producers in the area. To do so, they can learn from the successful experiences of other cooperatives in terms of providing housing projects, education, and improved production technologies.

The cooperatives should facilitate better access to technology and marketing channels, and to enhance the relationship between producers and intermediaries. They should intensify their efforts to increase backward and forward linkages, through investment in and organization of small industries in Baracoa.

Other recommendations pertain to the small farmers themselves. They should become more directly involved in the operation of the cooperatives. The producers should make greater efforts to require funds and technical support from public and private enterprises which can provide such resources. Producers should pressure the public representatives to enhance the presence of technical assistants in the area. Finally, the producers should seek out representatives of public and quasi-public agencies in the area who can provide them with information to facilitate

the development of appropriate technology for small-scale farming.

A closing comment should address the international sector. It is beyond the scope of this dissertation to present a detailed analysis of those international groups and agencies involved in development. Nevertheless, it is useful to consider how officials from the United Nations, the European Economic Community, the United States, and other countries could participate to a greater extent in the development process in Honduras.

International development officials have provided sorely needed assistance in Honduras since at least the 1960s. In terms of operational and organizational aspects, these officials and agencies have generally tended to work as autonomous units. Meetings and discussions are frequently held at the international level, but real application of their efforts has, for the most part, been minimal. These organizations have endeavored to aid Honduras at the policy, program, and project levels. Such efforts can yield greater results if international and national officials cooperated as members of an integrated task force, and/or advisory group.

If these recommendations are enacted, it is possible that the production of plantain in Honduras can achieve its potential as a valuable nontraditional agricultural export commodity.

APPENDICES

APPENDIX A
KEY INFORMANT GUIDELINE:
DESCRIPTION OF THE BARACOA PLANTAIN INDUSTRY

Questionnaire Number _____

Informant Name _____

Informant Occupation _____

Date _____ Place _____

HISTORY OF THE BARACOA AREA

A. Informant's Background

1. Could you please tell me when you came to Baracoa?

2. What work have you done here? _____

B. The Banana Company in Baracoa

People in this area believe that you know a lot about the history of Baracoa. Could you please tell me what you remember about this place:

3. Before the banana company came here?

4. After the company started working in the area?

5. When the company left the area?

6. What did the company do in Baracoa?

7. How did the company work?

8. Who worked with the company?

9. What happened to the people who worked with the company?

10. Could you tell me how the company produced plantain?

11. How did the company process the plantain?

12. How did the company export the plantain?

13. What did the company do with the plantain that could not be exported?

THE PLANTAIN INDUSTRY

C. The Present Plantain Industry for Export

After the company left Baracoa, the land was distributed to different persons, and individuals took over activities that the company used to perform.

14. How was land distributed between the new owners?

15. Could you please tell me more about production, processing, and marketing activities for export?

16. Who took over the production activities?

17. Could you please describe the production technology currently used by different producers of plantain for export?

18. What do farmers do after they cut their plantain?

19. Who picks up the plantain from the farms?

20. How are farmers paid?

21. Who took over the export activities after the company left Baracoa?

22. How is export done?

23. How did the cooperatives organize?

24. What do the cooperatives do?

25. What public and private agencies participate in the plantain industry?

26. How do these agencies work with the plantain producers?

D. The Domestic Plantain Industry

Not everybody produces plantain for export.

27. In your opinion, what are some reasons for farmers not to produce plantain for export?

28. Could you please tell me more about the people involved in production, processing, and marketing for the domestic market (who are they and what do they do)?

29. What technology do the farmers use to produce plantain for the domestic market?

30. How are these farmers paid?

31. What happens after the plantain is cut by the farmer?

32. Who are the middlemen and transporters of plantain for domestic use?

33. What do middlemen and transporters do with the plantain they buy?

34. How do public and private agencies work with the producers and middlemen who do not export?

INFORMANT'S COMMENTS

E. Observations

You know the Baracoa plantain production, processing, and marketing better than I do.

35. Is there anything else that you would like to tell me about the plantain industry in Baracoa?

APPENDIX B
QUESTIONNAIRE FOR PRODUCERS:
DETERMINATION OF SOCIAL AND ECONOMIC IMPACTS

Interview Number _____

Location of the Farm
Zone _____
Town _____

Date and time that the interview starts _____

IDENTIFICATION OF THE PRODUCER

Producer's Name
First last name _____
Second last name _____
Name _____

Interviewee's Sex
1. Male
2. Female

Permanent Residence
1. On the farm
2. In a town within the plantain area
3. In Puerto Cortés
4. In San Pedro Sula
5. In a town outside the plantain area

GENERAL INFORMATION ABOUT THE PRODUCER

Migration

Where were you born (State and County)?
_____

Where did you live before coming to this place?
_____

How many years have you lived here? _____

Do you expect to move during this year?
1. No, will not move at present
2. Yes, will move within the area, outside the farm
3. Yes, will move outside the area, outside the farm, far from here
4. Yes, will move to a house on the farm

Do you live here all year round?
1. Yes
2. No

Relationship with the company

Did you ever work with the Tela Fruit Company?
1. Yes
2. No

If yes, what kind of work did you do?

_____

If not, do you know about any work that the Tela had here?
1. Yes
2. No

Cooperative Member

Are you at present member of a plantain cooperative?
1. Yes, CARPHIL
2. Yes, COCOPLAINH
3. No

If not, were you ever a member of one of the plantain cooperatives?
1. Yes, CARPHIL
2. Yes, COCOPLAINH
3. No, cooperatives have too many conflicts
4. No, cooperatives cannot help to produce plantain
5. No, cooperatives are a problem when one wants to sell plantain
6. No, for other reasons

DEMOGRAPHIC INFORMATION AND QUALITY OF LIFE

Family Composition and Education

What is your marital status?
1. Single
2. Married
3. Free Union
4. Widowed
5. Divorced

How many persons live in this house? _____

We have to fill in a table with information about the people living in this house. Could you please help us get the most exact information. (TABLE)

Person's name / Sex / Family ties / Age / Last grade studied

Fertility

How many pregnant women live in this house? _____

We have to fill in a table with information about the women who have ever been pregnant in this house. (TABLE)

Woman's name / Total number of births and abortions / Age she gave birth or had an abortion / Number of live births

Mortality

We have to fill in a table with information about the children who have died. (TABLE)

Number of children who died / Sex / Age at death / Cause of death

Family employment opportunities

How many of the persons living in this house earn money working in your plantain farm? _____

How many of the persons living in this house earn money working elsewhere? _____

We have to fill in a table with information about the family's employment opportunities. (TABLE)

Name of the person who earns money / Does he help the family / Previous occupation / Occupation at present / Place where he works / How many weeks during the year does he work there / Training needed to work there / Weekly income estimates / Has he searched for another job during the last year / Where: 1. In the same village where he lives 2. In another village near here 3. In a larger city

House and services

What kind of light do you use in your house?

1. Electricity
2. Own electric motor
3. Gas Lamp
4. Wood
5. Candle

Do you have toilet facilities?
1. Yes, outhouse
2. Yes, toilet
3. No

Where do you get water?
1. River or creek
2. Public water pump
3. Public faucet
4. Water well on the land
5. Potable running water in the house

What type of transportation do you use?
1. Horse
2. Bicycle
3. Motorcycle
4. Bus
5. Own car or truck

Health

How many times during the previous six months has any member of your family have been seriously ill? _____

How many times during the previous six months has any member of your family visited the doctor? _____

PRODUCTION TECHNOLOGY

Experience in Production for Export

Have you ever sold your production for export?
1. Yes
2. No

If yes, when did you first sell for export? _____
When was the last time you sold for export? _____

If you have not sold for export, why?
1. Only cooperative members sell for export
2. Has not had loans to apply fungicides
3. The farm is too far from the buyer's place

Land Tenure

How many plantain farms do you have in this area? _____

We have to fill in a table with the information about the farms. (TABLE)

Name of Farm / Total number of hectares (acres) / Number of grown plantain / Number of hectares in nursery / Way you got the land (inheritance, bought, possession, renting, etc.) / Legal papers for the farm / Distance to the export container / Distance to the local buyer

Have you ever sold land in this plantain area?
1. Yes
2. No

If yes, how many hectares? _____

Why did you sell the land?
1. It was located too far away
2. It flooded too much and did not produce
3. I needed the money
4. I was sick or old

Is your business larger now than previously?
1. Yes
2. No

Improvements on the Farm

Does your land have a fence?
1. Yes, all the parcels
2. Yes, more than half of the parcels
3. Yes, some parts
4. No

Do you own a draining pump?
1. Yes
2. No, I rent
3. No, I do not need one

If yes, how did you get it?
1. Plantain Program
2. COCOPLAINH
3. CARPHIL
4. The buyer
5. Someone from the store came
6. Another producer brought it for him
7. I bought it in San Pedro Sula
8. I bought it in Puerto Cortés
9. I bought it in a store within the plantain area

Do you own a storage room where you keep fertilizers, herbicides, and fungicides?
1. Yes
2. No, I rent
3. No, I do not need it

Do you own cement basins for washing the plantain?
1. Yes
2. No, I rent
3. No, I do not need them

Do you own tubs for washing the plantain?
1. Yes
2. No, I rent
3. No, I do not need them

Do you own a champa (shelter) in a dry place for packing the plantain?
1. Yes
2. No, I rent
3. No, I do not need it

Equipment for Production

EQUIPMENT	owns	rents	loan	no need
tractor	___	___	___	___
small truck	___	___	___	___
large truck	___	___	___	___
motor sprayer	___	___	___	___
manual sprayer	___	___	___	___

If you have a motor or manual sprayer, where did you get it?
1. Plantain Program
2. COCOPLAINH
3. CARPHIL
4. The buyer
5. Someone from the store came
6. Another producer brought it
7. I bought it in San Pedro Sula
8. I bought it in Puerto Cortés
9. I bought it in a store within the plantain area

DESCRIPTION OF PRODUCTIVE ACTIVITIES

What crops do you produce?
1. Plantain
2. Maize
3. Rice
4. Others (specify) _____
_____

What animals do you have on your land?
1. Chickens
2. Pigs
3. Dairy cattle
4. Beef cattle
5. Others (specify) _____

Level of Technology

Do you replant?
1. Yes
2. No

If yes, what is your replanting interval?
1. From one week to less than a month
2. From one month to less than three months
3. From three months to less than six months
4. From six months to less than a year

If yes, how many persons do that work per hectare? ____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Do you do pruning?
1. Yes
2. No

If yes, what is your pruning interval?
1. Weekly
2. Biweekly
3. Every 22 days
4. More than a month

If yes, how many persons do that work per hectare? ____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

How many times a year do you fertilize? _____

Do you use disinfectants during pruning?
1. Yes
2. No

Do you do suckering?
1. Yes
2. No

If yes, what is your suckering interval?
1. From one week to less than a month
2. From one month to less than three months
3. From three months to less than six months
4. From six months to less than a year

If yes, how many persons do that work per hectare? ____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Do you use disinfectants during pruning?
1. Yes
2. No

Do you control weeds?
1. Yes, with chapia (mechanical by hand)
2. Yes, with herbicides
3. No

If yes, what is your herbicide application interval?
1. From one week to less than a month
2. From one month to less than three months
3. From three months to less than six months
4. From six months to less than a year

Do you apply herbicides?
0. No
1. Yes, hires a team of workers
2. Yes, uses a motorized sprayer
3. Yes, uses a manual sprayer

If yes, where do you get the product?
1. The Plantain Program brings it
2. COCOPLAINH provides it
3. CARPHIL provides it
4. The buyer brings it
5. The stores bring it
6. Another producer brings it
7. I buy it in San Pedro Sula
8. I buy it in Puerto Cortés
9. I buy it in a store within the plantain area

If you control weeds, how many persons do the work? ___
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Do you apply fertilizer?
1. Yes
2. No

If yes, what is your fertilizer application interval?
1. From one week to less than a month
2. From one month to less than three months
3. From three months to less than six months
4. From six months to less than a year

If yes, where do you obtain the fertilizer?
1. Plantain Program brings it
2. COCOPLAINH provides it
3. CARPHIL provides it
4. The buyer provides it
5. The stores bring it
6. Another producer brings it
7. I buy it in San Pedro Sula
8. I buy it in Puerto Cortés
9. I buy it in a store within the plantain area

If yes, how many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Does your plantain field have Black Sigatoka?
1. Yes
2. No

Do you control for Black Sigatoka?
1. Yes
2. Almost always
3. Almost never
4. No

If you control, what kind of control do you use?
1. Airplane
2. Motor sprayer
3. Manual sprayer

If you control, where do you get the fungicide?
1. The Plantain Program
2. COCOPLAINH provides it
3. CARPHIL provides it
4. The buyer provides it
5. The stores bring it
6. Another producer brings it
7. I buy it in San Pedro Sula
8. I buy it in Puerto Cortés
9. I buy it in a store within the plantain area

If you control, how many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Do your plantain fields have any other diseases?
1. Yes
2. No

Which other plantain diseases do you control?

_____
_____
_____

If you control, where do you get the chemicals?
1. The Plantain Program brings them
2. COCOPLAINH provides them
3. CARPHIL provides them
4. The buyer brings them
5. The stores bring them
6. Another producer brings them
7. I buy them in San Pedro Sula
8. I buy them in Puerto Cortés
9. I buy them in a store within the plantain area

If you control, how many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

How frequently do you harvest the product?
1. From one day to less than seven days
2. From seven days to less than twenty days
3. From twenty days to less than thirty days
4. Thirty days or more

How many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Are there months during the year that you do not harvest?
1. Yes
2. No

If yes, how many? _____

Do you pack your production for export?
1. Yes
2. Almost always
3. Almost never
4. No

If you pack, how many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

How do you transport the product from the field to the packing area?
1. Bicycle
2. Horse-drawn cart
3. Men on foot
4. Horse
5. Contracted small truck

When transporting the fruit, how many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

How do you transport the product from the packing area to the container?
1. Bicycle
2. Horse-drawn cart
3. Men on foot
4. Horse
5. Contracted small truck

When transporting the fruit, how many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Does your land flood?
1. Yes
2. No

If yes, does flooding occur on:
1. All the land
2. More than half of the land
3. Less than half of the land

Does your land have a drainage system?
1. Yes
2. No

If yes, is the system clean?
1. Yes
2. No

How often do you have to clean the system? _____

How many persons do the work? _____
How many persons are hired labor? _____
How many persons are unpaid family labor? _____

Use of Loans

Do you have any agricultural loans at present?
1. Yes, personal
2. Yes, as a cooperative member
3. No

If not, how have you obtained funds to work the plantain farm?
1. Selling the previous production
2. Selling other products
3. Selling the product in advance
4. From savings
5. From other sources of family income
6. Someone gives me the inputs
7. I only use unpaid family labor

If personal loan, where did you get it?
1. Private bank
2. BANADESA
3. Stores
4. Money lender

If not, have you ever requested an agricultural loan?
1. Yes, personal
2. Yes, as a cooperative member
3. No

If you have ever requested a loan, where did you get the personal agricultural loan?
1. Private bank
2. BANADESA
3. Store
4. Money lender
5. I was refused

If you ever requested a loan, did you obtain an agricultural loan as a cooperative member?
1. Yes
2. No

If you received a loan, do you still have a loan to pay?

1. Yes
2. No
3. Does not know, the cooperative has the information

FAMILY INCOME

How much plantain fruit do you produce during the year?

_____

How much plantain fruit do you sell for export?

_____

Where did you sell the fruit?

1. To COCOPLAINH
2. To CARPHIL
3. Another place (specify) _____

How much fruit did you sell to the local buyer?

_____

Last year, how much did the local buyer pay for the product? _____

How much production did you get from the other crops and animals on your property?

TYPE	QUANTITY OF PRODUCTION	QUANTITY SOLD	PRICE OF SALE

Which is the main source of family income?

1. Plantain
2. The other crops
3. The animals
4. The outside hired labor of family members
5. The pulpería
6. Other sales that the family makes
7. Other sources (specify) _____

ACCESS TO INSTITUTIONAL REOURCES FOR PRODUCTION

Technical Assistance

During the previous six months, has an agronomist visited you to provide technical assistance?
1. Yes, from the Plantain Program
2. Yes, from BANADESA
3. Yes, from COCOPLAINH
4. Yes, from CARPHIL
5. Yes, from FHIA
6. Yes, from FEPROEXAAH
7. Yes, from the stores
8. No

If someone has visited you, how many times a month?
_____

Has anyone from another agency visited you?
1. Yes, from INA
2. Yes, from the Ministry of Health
3. Yes, from the Ministry of Education
4. No

If yes, how many times per month? _____

INTERVIEWER'S REPORT

Time that the interview finished _____

Opinion about the interview

Was the producer cooperative?
1. Yes, very
2. Yes
3. No

Are the answers believable?
1. Yes, truthful
2. No, doubtful
3. No, very doubtful

Observations about the house

What was the prinicipal building material for the house?
1. Some temporary material
2. Bahareque
3. Adobe
4. Timber
5. Cement blocks
6. Bricks

With what material is the roof of the house made?
1. Straw or manaca
2. Zinc
3. Asbestos
4. Tile

What is the size of the house?
1. A single room
2. Several rooms

Other observations that the interviewer finds informative.

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BIOGRAPHICAL SKETCH

Cecilia Callejas Romero de Wilson obtained her Bachelor of Arts degree in applied social science and sociology from the Sir George Williams University in Montreal, Canada, in 1974. She returned to Honduras and worked in the Ministry of Natural Resources. She obtained a scholarship with absentee leave in 1981 to continue her studies in the University of Florida. In 1983 she obtained her Master of Arts degree in sociology from the University of Florida. She began her studies toward the doctoral degree and returned to Honduras in 1987 to collect field data. She has worked as a consultant for several national and international organizations. She currently works in the Honduran Ministry of Natural Resources as Coordinator for Peasant Affairs, under an absentee leave to finish her dissertation. She and her husband live in Tegucigalpa.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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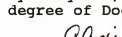

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This dissertation was submitted to the Graduate Faculty of the Department of Sociology in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 1991

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Dean, Graduate School